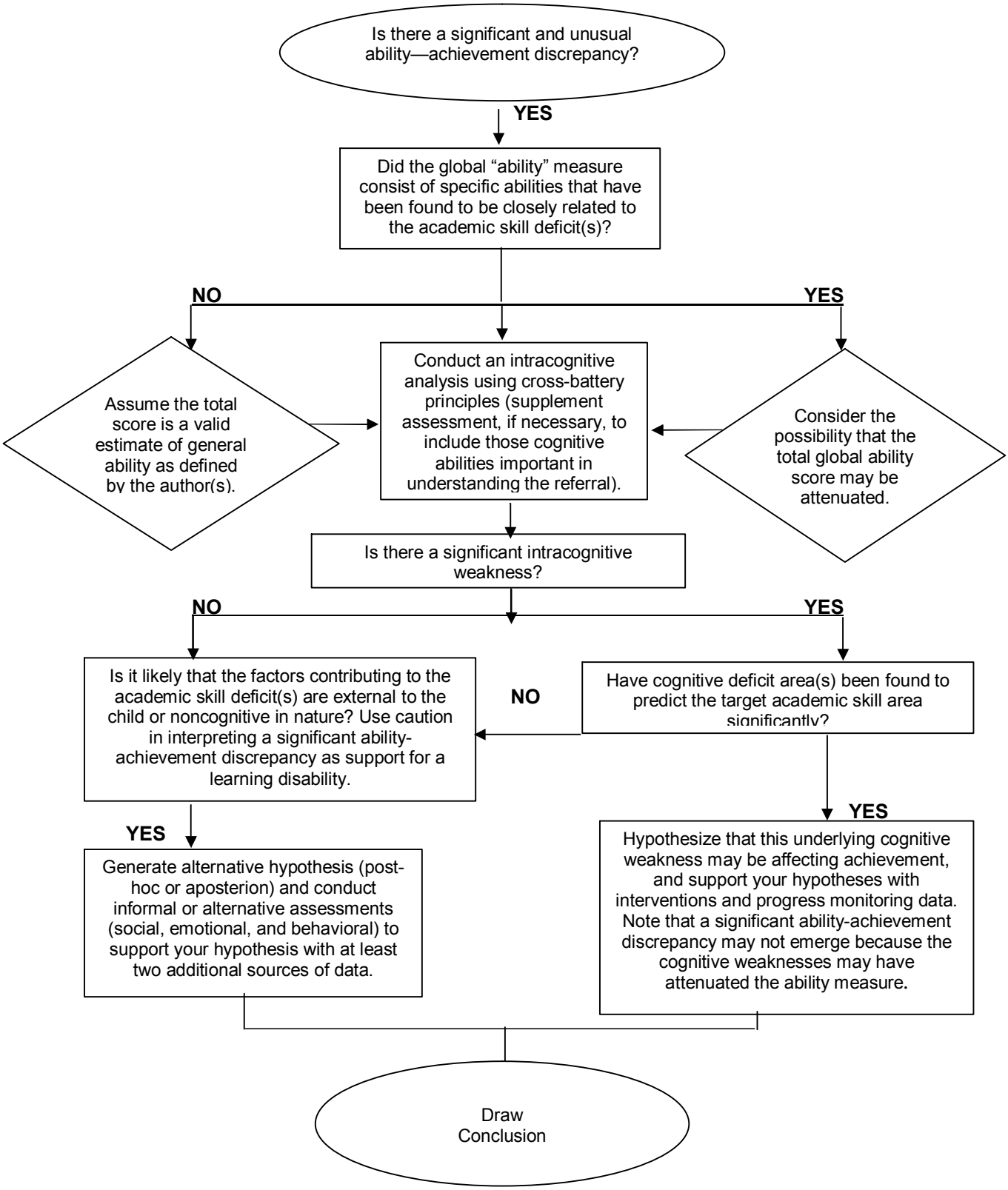
RESOURCE PACKET

Specific Learning Disabilities

Evaluation: Procedural Addendum B
Discrepancy and Processing Deficits

Flowchart

for Interpreting Ability-Achievement Discrepancies



Determination of Need for Evaluation Worksheet

School System: _____ School: _____ Grade: _____
Name of Student: _____ Date of Birth: ____/_____/_____ Age_____

Step One

Answer the following questions **Yes** or **No**:

_____ Were strategies or interventions recommended by the school?
_____ Were those interventions/strategies in place for a sufficient length of time?
_____ Were those strategies/interventions ineffective in remediating the student's progress in his/her deficit academic area(s)?
_____ Have appropriate general education interventions or strategies been attempted in the student's area(s) of academic difficulty?
_____ Has the student received consistent remedial instruction over an extended period of time?

Step Two

Based on information available in the student's record(s) and through the student's general education teacher, make a preliminary determination that the following factors are not the ***primary factor*** causing the student's underachievement.

_____ Limited English proficiency
_____ Environmental, cultural or economic disadvantage
_____ Lack of motivation
_____ Situational trauma (temporary, sudden, or recent change in the student's life
_____ Frequent school transfers, which have caused gaps in instruction or adjustment issues
_____ Lack of regular school attendance
_____ Medical condition(s)
_____ Visual, hearing or motor impairment

Step Three

If, after consideration of the above factors, the student exhibits a resistance to instruction based on a continued lack of progress, an evaluation to determine the presence of a learning disability may be appropriate.

_____ _____
Signature(s) of Person Completing Information Date

REFERRAL TO SPECIAL EDUCATION

The school should ensure that procedures outlined in the 2008 Special Education Manual are followed before a referral to special education is made. Students should not be referred solely because they require academic assistance and special education is the only available source of such assistance. When the student continues to exhibit a lack of progress in spite of appropriate interventions and modifications over time, referral to special education should be considered.

Referral Process

The school should provide all available data to special education before referral is implemented. If a Specific Learning Disability is suspected to be the primary reason for the student's lack of progress in general education, data should include the following information:

- reported areas of academic difficulty,
- documentation of the problem,
- evidence that the problem is *chronic,*
- record of modifications attempted,
- school attendance and school transfer information,
- multi-sensory instructional alternatives, and
- documentation of appropriate instruction in the area of academic deficiency which includes data documenting scientifically-based interventions, progress monitoring and reporting to parents which evidences the student's continued lack of progress.

Once the school has determined a need for referral to special education, the above-referenced information is provided and the referral process begins. The following steps are recommended.

- Documentation of appropriate prereferral interventions and strategies for the student's deficit area of achievement should be provided prior to the referral.
- Parent notification of the referral is made – a copy of the *Procedural Safeguards* must accompany this notice.
- Relevant special education paperwork is completed and *Prior Written Notice* is sent to the parents of the child.
- *Informed Written Parental Consent* must be obtained from the parent before any evaluation may take place. *Informed Written Parental Consent* is, by definition [§300.505 - Parental consent].
- The general education classroom teacher conducts an indirect classroom observation..

When information is not available, vision and hearing screenings[1] are made. When students do not pass one or both of the sensory screenings, referrals should be made for more comprehensive screening and/or relevant medical examinations.

- Appropriate referral papers are collected and given to the case manager for the student's school (e.g., the school psychologist or special education teacher).
- The school psychologist conducts an cognitive assessment.
- School personnel trained to administer the individualized achievement test conduct an assessment of achievement.
- The school psychologist writes the Psychoeducational Report.
- An IEP meeting is scheduled to review the assessment results and determine whether the student is eligible for special education.
- In making this determination, teams must rule out SLD Exclusionary Factors.
- Once eligibility is determined, the IEP team completes the *Eligibility Report* and proceeds to develop an IEP for the student.

[1] Vision and hearing screening information should be current. Recommended timelines for purpose of these guidelines is within 12 months of the referral for students at the elementary and middle school levels, and within 18 months at the high school level.

SPECIFIC LEARNING DISABILITIES

1. Definition

"Specific Learning Disability" The term Specific Learning Disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations, and that adversely affects a child's educational performance. Such term includes conditions such as perceptual disabilities (e.g., visual processing), brain injury that is not caused by an external physical force, minimal brain dysfunction, dyslexia, and developmental aphasia. Specific Learning Disability does not include a learning problem that is primarily the result of Visual Impairment, Hearing Impairment, Orthopedic Impairment; Mental Retardation; Emotional Disturbance; limited English proficiency; environmental or cultural disadvantage.

2. Evaluation

The characteristics as identified in the Specific Learning Disabilities Definition are present.

a. Evaluation for Specific Learning Disabilities shall meet the following nine standards:
   (1) evidence that underachievement in a child was not due to a lack of appropriate (the child's State-approved grade level standards) scientifically-validated instruction (instruction that has been researched using rigorous, well-designed, objective, systematic, and peer-reviewed studies) in reading and math;
   (2) evidence that prior to, or as a part of, the referral process, the child was provided appropriate instruction in general education settings;
   (3) evidence that instruction was delivered by appropriately trained personnel;
   (4) data-based documentation of repeated formal assessment of student progress during instruction (progress monitoring data) that has been collected and recorded frequently (a minimum of one data point per week in each area of academic concern);
   (5) evidence that progress monitoring data was provided to the child's parents at a minimum of once every four and one-half (4.5) weeks;
   (6) evidence that, when provided scientifically-validated instruction and appropriate interventions and learning experiences, the child did not achieve at a proficiency level or rate consistent with State-approved grade level standards or with the child's age, in one or more of the following areas;
      (a) oral expression,
      (b) listening comprehension,
      (c) written expression,
      (d) basic reading skills,
      (e) reading fluency skills,
      (f) reading comprehension,
      (g) mathematics calculation, and
      (h) mathematics problem solving;

(7) evidence that the child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to State-approved grade-level standards, the child's age, or intellectual development that is determined to be relevant to the identification of a Specific Learning Disability (as defined in the definition of Specific Learning Disabilities); and

(8) evidence that the child's learning problems are not primarily due to Visual Impairment, Hearing Impairment, Orthopedic Impairment; Mental Retardation; Emotional Disturbance; limited English proficiency; environmental or cultural factors; motivational factors; or situational trauma (i.e., temporary, sudden, or recent change in the child's life);

b. A child whose characteristics meet the definition of a child having a Specific Learning Disability may be identified as a child eligible for Special Education services if:

(1) all the requirements of standards 2.a.(1) – 2.a. (8) have been met;

(2) the evidence and documentation is evaluated and results verify that the characteristics exhibited by the child meet the definition of a Specific Learning Disability; and

(3) documentation, including observation and/or assessment, of how Specific Learning Disabilities adversely impacts the child's educational performance in his/her learning environment.

Evaluation Procedures

Evaluation and identification of students with Specific Learning Disabilities may be conducted using *either* a State-Approved Responsiveness to Intervention (RTI) Method of Identification *or* the State-Approved IQ/Achievement Discrepancy Method of Identification as described in Procedural Addenda A and B, respectively, of the Specific Learning Disabilities Standards.

Evaluation Participants

Information shall be gathered from the following persons in the evaluation of a Specific Learning Disability:

(1) the parent;

(2) the child's general education classroom teacher;

(3) a licensed special education teacher; a licensed school psychologist, licensed psychological examiner, licensed senior psychological examiner, or licensed psychologist;

(4) at least one person qualified to conduct an individual diagnostic evaluation {e.g., licensed special education teacher, licensed speech-language teacher/pathologist or licensed remedial reading teacher/specialist); and

(5) other professional personnel as indicated (e.g., Optometrist or Ophthalmologist).

PROCEDURAL ADDENDUM B

The IQ/Achievement Discrepancy Method of Identification

SPECIFIC LEARNING DISABILITIES

1. Definition

The IQ/Achievement Discrepancy Method of Identification concludes there is a severe discrepancy between educational performance and predicted achievement that is based on the best measure of cognitive ability. A severe discrepancy between educational performance and predicted achievement that is based on the best measure of cognitive ability is defined by at least 1.5 Standard Deviations (considering Standard Error of the Estimate) when utilizing regression-based discrepancy analyses described in Tennessee's guidelines for evaluation of Specific Learning Disabilities in the SLD Assessment Resource Packet: http://www.state.tn.us/education/speced/seassessment/.

2. Evaluation

(1) The IQ/Achievement Discrepancy Method of Identification must include documentation that all the standards in the Specific Learning Disabilities Evaluation Section 2.a.(1) – 2.a.(8) and Evaluation Section 2.b.(1) through 2.b.(3) have been met.

(2) Evaluation using the IQ/Achievement Discrepancy Method of Identification must also include:

(a) an individual standardized multi-factored assessment of cognitive ability;

(b) an individual standardized assessment of academic achievement;

(c) documentation of performance on all of the following:

i. group or individually administered achievement tests; and

ii. criterion-referenced assessments or curriculum/performance-based assessments;

(d) at least two documented observations of the child's educational performance in the general education classroom including:

i. an indirect observation by the child's general education classroom teacher, and

ii. a direct observation by a professional other than the person providing the indirect observation (observations shall address the child's academic behaviors, academic performance, and relevant work samples);

(e) documentation of parental input; and, as appropriate, the child's input; and

(f) documentation that the child's learning problems are not primarily due to:

i. lack of appropriate instruction in reading and math;
ii. limited English proficiency;
iii. Visual Impairment;
iv. Hearing Impairment;
v. Orthopedic Impairment;
vi. Mental Retardation;
vii. Emotional Disturbance;
viii. environmental or cultural factors;
ix. motivational factors; and
x. situational trauma.

Best Measure of Cognitive Ability

The term "best measure of cognitive ability" is usually a global score (e.g., WISC-IV Full Scale IQ, WJ-III General Intellectual Ability or the SB-V Test Composite). This global score is the most reliable measure and is usually the most predictive of academic success. There are occasions, however, when significant variation among the component factor scores prompts the examiner to consider this global score to be a low estimate of ability. In such cases, another principal factor score or a partial composite may be a better estimate of cognitive ability.

Occasionally there will not be a significant discrepancy between the best measure of cognitive ability and academic achievement (as defined in the SLD standards), *although there will be reliable and valid evidence of a significant cognitive processing disorder* (evidenced by a discrepancy among subtest standard scores across the battery, thus preventing the measurable discrepancy between ability and achievement.) When this occurs, the hypothesis that the student has a Specific Learning Disability must be supported by establishing a definitive link between the identified processing disorder and the student's academic achievement deficit(s) as evidenced throughout the evaluation and other information collected. In the following circumstances, a Specific Learning Disability *does exist* and *should be identified*.

There are occasions, however, when the SP determines that one particular scale (such as the Verbal or Performance scale of the WISC-III) more accurately reflects the student's academic potential. If this occurs, the SP may substitute the particular scale for the composite score in determining a severe discrepancy. The SP should document the rationale for making this exception in the psychoeducational report. When making a decision to use a score other than the total score, the following steps should be taken.

- Consult the test manual for statistical significance and prevalence data.
- Ensure that the level of statistical significance is satisfied at the .05 alpha level.
- Ensure that this significant difference occurs in less than 25% of the general population (i.e., prevalence rate is lower than 25%).
- When selecting a factor score other than the global score, the examiner should select a score containing *at least three subtests or scales unless two subtests or scales satisfactorily measure the test construct*.

When ruling out this factor the IEP team must employ professional judgment regarding a student's test scores and other relevant data. There are times when a student's best measure of cognitive functioning will be depressed by his or her processing disorder(s). The IEP team must carefully and fully document any decision to this effect.

USING THE SLD REGRESSION TABLE

The *SLD Regression Table* is provided to assist the school psychologist in determining the presence of a severe discrepancy. It takes into account both the *Standard Error of the Estimate (SEe*) and *Regression to the Mean*.

The correlation coefficients in this table are based upon validity studies and other available research data. As the reliabilities of the measures used are highly varied and the areas measured differ, some of the correlations used in the Regression Table are estimates of the actual correlation between ability and achievement. These estimates, however, have been deemed appropriate and within acceptable margins for error. Therefore, they will be used when the school psychologist has evaluated the student with two measures that were not conormed.

If measures of ability and achievement that were conormed have been administered in the assessment of the child, the school psychologist should use the tables provided with those instruments to determine predicted achievement and the presence of a severe discrepancy. Use of conormed instruments is the most accurate way to predict achievement as the actual correlations between those instruments was utilized in making the necessary calculations. When this is the case, the school psychologist should study the Examiner's Manual(s) and any technical information for each of the instruments being used. The following information will help guide this process.

- Consult the manual to determine the Standard Error of the Estimate (SEe) units that were used to determine whether a difference is statistically significant. For instance, for the WJ-IIII Compuscore program (Schrank & Woodcock, 2001) the examiner should
  - go to the pull-down menus and open the "Program Options,"
  - click on the "Report Options" tab at the top, and
  - set the "Discrepancy Cutoff" to 1.5 SD (SEe) units.

- If the manual does not specify the SEe units that were used to determine significance, the school psychologist should contact the test's publisher/author(s) to determine the procedures used. If this is not possible or feasible, the examiner should obtain the predicted score and subtract the obtained score from it. Next (using the appropriate column in the regression table based on the ability measure given) use the number of points required for that column to determine if a severe discrepancy exists.

Specific Learning Disabilities—Assessment Worksheets

To be completed by Assessment Specialist(s)

A. Learning Disability Areas of Discrepancy	Circle all areas that meet discrepancy [Based on 1.5 Standard Deviations (adjusted by SEe) using Regression to the Mean (SEe's) for Predicted Achievement and record discrepancies in appropriate box(es)							
	Basic Reading	Reading Comp	Reading Fluency	Math Calc	Math Problem Solving	Written Expression	Listening Comprehension	Oral Expression
Predicted Achievement Score based on _____ (IQ Test)] ➔								
Actual Achievement Score based on _____ [Achievement Test] ➔								
• Difference between Predicted and Actual Achievement Scores ➔								
• ***Discrepancy is ≥ 1.5 standard deviations – adjusted by SEe (Y or N)***								
B. Supportive Data in the Identified Deficit Academic Area(s) [Optional – in addition to data documenting scientifically-based instruction and interventions in the general education classroom]	**Report scores in the appropriate boxes**							
• 2nd Individual Achievement Test [Test:_____]								
• Group Achievement Measure [Test_____]								
• Criterion-Referenced Assessment [Test_____]								
• Curriculum/Performance-based Assessment ❑ Yes ❑ No ❑ Work samples are Attached	**Attach work samples or evidence for curriculum/performance based assessments**							
• Supportive data supports achievement discrepancy (Y or N)➔								
Cognitive Processing Disorder [assessment optional]								
Test or Subtest_____ Score(s)_____ Test or Subtest_____ Score(s)_____ Other evidence of cognitive processing disorder: _____ _____ _____ Processing Disorder _____ (✓) Processing disorder manifested in achievement deficit of ➔								
Test or Subtest_____ Score(s)_____ Test or Subtest_____ Score(s)_____ Other evidence of cognitive processing disorder: _____ _____ _____ Processing Disorder _____ (✓) Processing disorder manifested in achievement deficit of ➔								

C. Exclusionary Factors (Probing Questions) Each factor must be ruled out as the PRIMARY FACTOR for the student's inability to progress in the general education curriculum	**Yes**	**No**
1. Lack of instruction in reading and math		
a. "Reading Worksheet" and/or "Math Worksheet" has been completed, as appropriate for identified deficit.	a.	a.
b. Information provided by worksheet(s) indicates lack of instruction in reading and math is NOT the determinant factor in this student's inability to progress in the general education curriculum.	b.	b.
2. Limited English Proficiency		
Answer the following questions.		
a. Is there a language other than English spoken by this student?	a.	a.
b. Is there a language other than English spoken in the student's home?	b.	b.
c. Are there any specific dialectical or cultural influences that would affect the student's ability to speak or understand English?	c.	c.
If questions a—c are NO, limited English proficiency is not a determinant factor. If any of the questions a—c are YES, please document the reason(s) that English proficiency is not the determinant factor for the suspected learning disability. _____		
3. Mental Retardation		
Document all information gathered through assessment that would exclude Mental Retardation (MR) as the determinant factor for this student's academic deficits.		
a. Cognitive score(s) _____ / Is this student's cognitive profile equally depressed in all areas?	a.	a.
b. If 3a is Yes, does the *Written Psychological Report* justify the exclusion of MR as the primary factor in this student's ability to learn?	b.	b.
4. Emotional Disturbance		
Document all information gathered through assessment that would exclude Emotional Disturbance (ED) as the determinant factor for this student's academic deficits.		
a. Does the student exhibit emotional difficulties that interfere with learning?	a.	a.
b. Does the student have a medical history and/or school history of emotional difficulties?	b.	b.
c. If a or b are YES, has an ecologically valid Functional Behavior Assessment (FBA) been conducted? **Results of FBA**_____	c.	c.
d. The results of the FBA provide information that ED is not the determinant factor for this student's learning problem(s).	d.	d.
5. Visual Impairment, Hearing Impairment/Deafness or Orthopedic Impairments		
Document all information gathered through assessment that would exclude visual Impairments, Hearing Impairments or Deafness, or Orthopedic Impairments as the determinant factor for this student's academic deficits. Answer *Yes* if the results are *not* the determinant factor of disability.		
a. **Vision** Right eye: **[**Near Vision _____ Pass_____ Fail**]** **[**Far Vision_____ Pass _____ Fail**]** Left eye: **[**Near Vision _____ Pass_____ Fail**]** **[**Far Vision_____ Pass _____ Fail**]** Both eyes: **[**Near Vision _____ Pass_____ Fail**]** **[**Far Vision_____ Pass _____ Fail**]** Follow-up screening results (if any): _____ Medical diagnoses and/or corrections (if any): _____	a.	a.
b. **Hearing** Right ear: _____ Pass _____ Fail] [Left Ear: _____ Pass _____ Fail] Follow-up screening results (if any): _____ Medical diagnoses and/or corrections (if any): _____	b.	b.
c. Does the student have a history of significantly delayed motor development?	c.	c.
d. Is there a medical diagnosis for a motor impairment that would affect this student's ability to learn or access general classroom instruction?	d.	d.
e. Have any physical or motor impairments been observed or assessed? _____	e.	e.
6. Environmental or Cultural Factors		
Document all information gathered through assessment that would exclude environmental, cultural or economic disadvantage as the determinant factor for this student's academic deficits.		
a. "Environmental, Cultural or Economic Disadvantaged" Worksheets have been completed.	a.	a.
b. Information provided by these worksheets indicates environmental, cultural, or economic disadvantages are not the determinant factors in this student's inability to access general education curriculum.	b.	b.
7. Motivational Factors		
Answer the following questions.		
a. Does the student attempt classroom assignments and/or homework?	a.	a.
b. If *no*, is the student's performance on grade level during classroom activities?	b.	b.
c. Are group achievement scores consistent with the student's grades?	c.	c.
d. Does information gathered indicate lack of motivation is NOT the determinant factor for the disability? Other observations: _____	d.	d.
8. Situational Trauma		
Answer the following questions.		
a. Has the student's academic performance fallen dramatically within the last 6-12 months?	a.	a.
b. Is there knowledge of any situations within the student's family that would contribute to a drop in academic performance? (E.g., death of a close family member or pet, divorce of parents, parent remarrying, etc.)	b.	b.
c. Does information gathered indicate situation trauma is *no* the determinant factor for the disability?	c.	c.

Environmental or Cultural Factors Worksheet

One method of determining if environmental or cultural factors can be ruled out might be determined by using a checklist such as the one below. Experiences in school could cause students who might otherwise be disadvantaged to no longer have a disadvantage. This checklist should be completed while considering school experiences which could give the evaluator(s) sufficient information to indicate that the child's "lack of exposure" is *not* the cause for the disability.

School System: _____ School: _____ Grade: _____
Name of Student: _____ Date of Birth: ____/_____/_____ Age_____

(Check all factors that apply to the student. Use available records, interviews with parents, teachers and other resources to obtain data)

Environmental Disadvantage

_____Limited experiential background
_____Irregular attendance (absent at least 23% of the time in a grading period for reasons other than verified personal illness)
_____Transiency in elementary school years (at least two moves in a single school year)
_____Home responsibilities interfering with learning activities (caring for siblings while parents work or other major home responsibilities)
_____Residence in a depressed economic area
_____Low family income at subsistence level
_____Family unable to afford enrichment materials and/or experiences

Cultural Disadvantage

_____Limited experiences in majority-based culture (child does not participate in scouts, clubs, other organizations and activities with members of dominant culture)
_____Child has had limited involvement in organizations and activities of any culture
_____Secondary standards in conflict with majority-based culture standards
_____Geographic isolation

Are the above checked items compelling enough to indicate that this student's classroom performance and deficits are primarily due to environmental, cultural, or economic disadvantages? A child whose severe discrepancy between ability and achievement is *primarily* the result of the types of disadvantage indicated above should not be identified as having a Specific Learning Disability. A "score" of greater than half of the areas being observed indicates a strong possibility of this exclusionary factor and should be addressed and justified by the IEP team if an "override" of those factors are to be considered.

_____
_____
_____
_____
_____
Signature of Person(s) Completing Form

Direct Observation

School System: _____ School: _____ Grade: _____
Name of Student: _____ Date of Birth: ____/_____/_____ Age_____

The purpose of this evaluation is to provide information regarding this student's classroom behaviors in the area(s) of suspected deficiency. Carefully observe this student and provide the requested information.

Describe the lesson/activities of the class during this observation session (e.g., lecture, discussion, independent seatwork, small group work).

_____
_____

Describe any special conditions during this evaluation (e.g., student seated away from group).

_____
_____

What was the student's behavior during the observation session? Be as specific as possible.

_____
_____
_____
_____
_____

How does this student's behavior compare to that of other students in the class?
(Note: You may wish to compare the child to an average peer of the same age and gender.)

_____
_____
_____
_____
_____

Do you have any other comments or concerns?

_____
_____
_____
_____
_____

_____ _____
Printed Name of Person Completing Form Job Title

_____ _____
Signature of Person Completing Form Date

General Education Teacher's Input

(Indirect Observation)

School System: _____ School: _____ Grade: _____
Name of Student: _____ Date of Birth: ____/_____/_____ Age_____

Carefully consider the following questions and provide as much information as possible regarding this student's typical daily performance in your classroom. His or her behavior should be evaluated in comparison to a typically functioning student of the same age and in terms of appropriate developmental stages and expectations.

Describe this student's reading skills (e.g., decoding, comprehension, and fluency).

_____
_____
_____
_____
_____

Describe this student's math skills (e.g., calculation, numerical concepts, and word problems).

_____
_____
_____
_____
_____

Describe other academic concerns/performance levels (e.g., science, social studies, and problem-solving skills).

_____
_____
_____
_____
_____

Describe this student's behavior in the classroom (e.g., following rules, attention to task, organizational skills, relationships to peers, and problems or concerns).

_____
_____
_____
_____
_____

❑ Yes ❑ No This student does *not* perform academically in the classroom in a manner that is commensurate with current academic standards.

_____ _____ _____
Printed Name of Person Completing Form Job Title

_____ _____ _____
Signature of Person Completing Form Date

Teacher Checklist – Basic Reading Skills

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

YES	NO	SOMETIMES	THE STUDENT:
1. ____	____	____	1. avoids reading.
2. ____	____	____	2. demonstrates a change in behavior when asked to read silently.
3. ____	____	____	3. demonstrates a change in behavior when asked to read orally.
4. ____	____	____	4. names alphabet letters correctly.
5. ____	____	____	5. recognizes his/her name in print.
6. ____	____	____	6. matches letters.
7.			7. guesses words from:
___	___	___	a. initial letters.
___	___	___	b. pictorial cues.
___	___	___	c. context cues.
8.			8. sounds out:
___	___	___	a. vowels correctly
___	___	___	b. consonants correctly
___	___	___	c. words correctly
9. ____	____	____	9. blends sounds correctly.
10. ____	____	____	10. has an adequate sight word vocabulary.
11.			11. substitutes:
___	___	___	a. sounds
___	___	___	b. words
12.			12. omits:
___	___	___	a. sounds
___	___	___	b. words
13.			13. repeats:
___	___	___	a. sounds
___	___	___	b. words
14. ____	____	____	14. reads from left to right.
15. ____	____	____	15. skips lines.
16. ____	____	____	16. moves head when reading.
17. ____	____	____	17. moves lips when reading.
18. ____	____	____	18. uses finger to anchor self when reading.
19. ____	____	____	19. reads high frequent sight words correctly (the, and, but).
20. ____	____	____	20. drops voice at the end of a sentence.
21. ____	____	____	21. reads orally with expression.
22. ____	____	____	22. reads word-by-word.
23. ____	____	____	23. reads faster silently than orally.
24. ____	____	____	24. observes small differences between words (plurals, verb-endings, possessives).
25. ____	____	____	25. Corrects his/her own errors.

Teacher Checklist – Reading Fluency

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

OFTEN	RARELY	SOMETIMES	WHEN READING ALOUD DOES THE STUDENT:
1. ____	____	____	1. stop frequently?
2. ____	____	____	2. make inappropriate pauses?
3. ____	____	____	3. read word by word?
4. ____	____	____	4. speak in a flat, monotone voice?
5. ____	____	____	5. miss emotional and contextual cues?
6. ____	____	____	6. mix up who says which piece of a dialogue in a narrative?
7. ____	____	____	7. pay little attention to punctuation?
8. ____	____	____	8. painstakingly sound out words?
9. ____	____	____	9. have difficulty with sounds?
10. ____	____	____	10. fail to recognize recurring words?
11. ____	____	____	11. emphasize the wrong syllable?
12. ____	____	____	12. ignore suffixes and prefixes?
OFTEN	**RARELY**	**SOMETIMES**	**WHEN READING SILENTLY DOES THE STUDENT:**
13. ____	____	____	13. read at about the same speed as when reading aloud?
14. ____	____	____	14. shift eyes often on the page?
15. ____	____	____	15. need to stop and reread often?
16. ____	____	____	16. seem to skim large chunks of text?

Teacher Checklist – Reading Comprehension

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

	YES	NO	SOMETIMES	THE STUDENT:
1.	____	____	____	17. orients book in proper position and turns pages left to right.
2.	____	____	____	18. attempts to read, using picture and context cues.
3.	____	____	____	19. recognizes common words in stories.
4.	____	____	____	20. begins to use phonetic cueing system (e.g., beginning sounds).
5.				21. uses decoding skills:
a.	____	____	____	a. uses common vowels, vowel patterns, consonant sounds, consonant blends, digraphs, and diphthongs,
b.	____	____	____	b. applies rules of syllabication,
c.	____	____	____	c. demonstrates knowledge of prefixes, suffixes and
d.	____	____	____	d. compound words.
				22. uses context clues.
6.	____	____	____	6. automatically recognizes previously taught vocabulary in print (sight and reading vocabulary).
7.	____	____	____	7. demonstrates fluent oral reading.
8.				8. comprehends complex sentence structure:
a.	____	____	____	a. understands passive voice (Mice were eaten by the cat.).
b.	____	____	____	b. understands relative clauses (the cake that Mac ate).
c.	____	____	____	c. understands direct and indirect quotes within a passage.
d.	____	____	____	d. understands pronoun reference (he = Billy).
9.				9. recognizes different uses of words depending on context:
b.	____	____	____	a. recognizes meanings of antonyms and synonyms.
c.	____	____	____	b. recognizes multiple meanings (fly – a fly, to fly).
d.	____	____	____	c. understands figurative language (hold your horses).
e.	____	____	____	d. differentiates homonyms (rode – road).
10.				10. comprehends age- and/or grade-appropriate passages:
a.	____	____	____	a. summarizes a story or passage.
b.	____	____	____	b. identifies the main idea of a selection.
c.	____	____	____	c. identifies supporting details.
d.	____	____	____	d. compares and contrasts stories, characters, events, etc.
11.				11. uses printed materials for a variety of purposes:
a.	____	____	____	a. makes and confirms predictions.
b.	____	____	____	b. understands author's purpose.
c.	____	____	____	c. locates details and facts to answer questions and draw conclusions.
d.	____	____	____	d. uses printed material to gather information (for reports, personal interest, etc.).
12.	____	____	____	12. comprehends material from a variety of sources (newspaper, magazine, content area text, trade books, reference materials).
13.	____	____	____	13. follows a sequence of written directions to complete a task (work sheet directions, recipes, directions for building a model).

Source: Ohio Department of Education (1991). Ohio handbook for the identification, evaluation and placement of children with language problems. Used with permission.

Teacher Checklist – Mathematics Calculation

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

YES	NO	SOMETIMES	THE STUDENT:
1. ____	____	____	1. counts by rote to 20.
2. ____	____	____	2. counts by tens.
3. ____	____	____	3. understands one-to-one correspondence.
4. ____	____	____	4. reads numbers to 20.
5.			5. completes addition correctly with:
a. ____	____	____	a. one digit numbers.
b. ____	____	____	b. two or more digit numbers.
6.			6. completes subtraction correctly with:
a. ____	____	____	a. one digit numbers.
b. ____	____	____	b. two or more digit numbers.
c. ____	____	____	c. borrowing.
7.			7. completes multiplication correctly with:
a. ____	____	____	a. one digit numbers.
b. ____	____	____	b. two or more digit numbers.
8.			8. completes division correctly with:
a. ____	____	____	a. one digit numbers.
b. ____	____	____	b. two or more digit numbers.
9. ____	____	____	9. confuses operational signs.
10. ____	____	____	10. uses fingers for computation.
11. ____	____	____	11. uses manipulatives for computation.
12. ____	____	____	12. reverses numbers.
13. ____	____	____	13. keeps columns straight.
14. ____	____	____	14. copies problems with adequate spacing.
15. ____	____	____	15. finds page numbers correctly.
16. ____	____	____	16. uses place values correctly.
17. ____	____	____	17. completes problems involving more than one mathematical operation.
18. ____	____	____	18. completes problems very slowly.
19. ____	____	____	19. avoids the use of math.
20. ____	____	____	20. changes behavior when required to do math.
21. ____	____	____	21. completes math problems “inn his/her head”.
22. ____	____	____	22. shows more ability in reading than math.
23. ____	____	____	23. shows more tension during math than other subject.
24. ____	____	____	24. completes math assignments at his/her level.
25. ____	____	____	25. corrects his/her own errors.

Teacher Checklist – Mathematics Reasoning

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

YES	NO	SOMETIMES	THE STUDENT:
1. ____	____	____	1. applies math operations to real life problems.
2. ____	____	____	2. completes word problems.
3. ____	____	____	3. understands basic math concepts such as more/less.
4. ____	____	____	4. recognizes and names basic shapes (circle, square, diamond).
5. ____	____	____	5. experiences some success with puzzles, codes, and card games.
6. ____	____	____	6. understands basic time concepts (yesterday, before).
7. ____	____	____	7. names the days of the week correctly.
8. ____	____	____	8. names months correctly.
9. ____	____	____	9. uses the calendar correctly.
10. ____	____	____	10. tells time to the nearest half-hour.
11. ____	____	____	11. tells time correctly.
12. ____	____	____	12. uses basic money terms correctly (penny, dime, dollar).
13. ____	____	____	13. Makes change correctly.
14. ____	____	____	14. uses basic measurements correctly.
15. ____	____	____	15. uses tables and/or graphs correctly.
16. ____	____	____	16. chooses appropriate operations to complete math problems.
17. ____	____	____	17. guesses at answers instead of trying to solve problems.
18. ____	____	____	18. solves problems with missing elements.
19. ____	____	____	19. differentiates between essential and nonessential information in solving problems.
20. ____	____	____	20. solves problems with a rote, inflexible approach.
21. ____	____	____	21. uses manipulatives creatively to solve problems.
22. ____	____	____	22. asks for assistance from the teacher instead of attempting to solve the problem.
23. ____	____	____	23. asks for assistance from other students instead of attempting to solve the problem.
24. ____	____	____	24. solves problems involving a sequence of steps.

Teacher Checklist – Written Expression

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

	YES	NO	SOMETIMES	THE STUDENT:
1.	____	____	____	orients book in proper position and turns pages from the left.
2.	____	____	____	copies materials correctly from board and desk.
3.	____	____	____	uses correct spacing for letters ( ) and words ( ) (writes letters on – not below or above – the base line).
4.	____	____	____	writes fluently, is not slow and labored.
5.	____	____	____	uses a variety of sentence structures.
6.	____	____	____	recognizes own letter/numeral reversals.
7.	____	____	____	uses correct capitalization and punctuation in daily written work.
8.				uses correct grammar in written work:
	a. ____	____	____	a. uses plurals correctly: regular ( ) and irregular ( ).
	b. ____	____	____	b. uses subject and verb appropriately.
	c. ____	____	____	c. expresses questions correctly: yes/no ( ) and "wh-" questions ( ).
	d. ____	____	____	d. uses negation correctly.
	e. ____	____	____	e. uses pronouns correctly – personal ( ), demonstrative ( ), and reflexive ( ).
9.				uses writing to communicate information
	a. ____	____	____	a. provides reader with appropriate amount of information (detail, background, context).
	b. ____	____	____	b. uses appropriate degree of familiarity (e.g., business vs. friendly letter).
	c. ____	____	____	c. approaches written tasks in prescribed format using appropriate conventions (e.g., fiction, information, requesting, personal).
10.				uses content skills appropriately:
	a. ____	____	____	a. writes about a single event, experience, or point of view.
	b. ____	____	____	b. adds descriptive detail.
	c. ____	____	____	c. expresses original ideas, humor, and imagination.
11.				evidences overall organizational pattern in written composition:
	a. ____	____	____	a. sequences events or points logically within paragraphs and/or composition.
	b. ____	____	____	b. reports a clear beginning, middle, and end.
	c. ____	____	____	c. uses topic statements and maintains topic.
	d. ____	____	____	d. uses age-appropriate vocabulary.
	e. ____	____	____	e. avoids fragments and run-on sentences.
	f. ____	____	____	f. presents details and facts to develop and support the main idea.
12.				uses effective writing process:
	a. ____	____	____	a. pre-writing activities (e.g., topic choice).
	b. ____	____	____	b. demonstrates use of drafting.
	c. ____	____	____	c. uses proofing skills (e.g., precise phrasing).
	d. ____	____	____	d. shares written work (e.g., peer editing).

Source: Ohio Department of Education (1991). Ohio handbook for the identification, evaluation and placement of children with language problems. Used with permission.

Teacher Checklist – Listening Comprehension

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

YES	NO	SOMETIMES	THE STUDENT:
1. ____	____	____	1. enjoys having stories read aloud.
2. ____	____	____	2. has an attention span for verbal presentation adequate for age level.
3. ____	____	____	3. attends to all of what is said rather than "tuning out" portions.
4. ____	____	____	4. is able to ignore auditory distractions.
5. ____	____	____	5. faces source of sound directly – does not tilt one ear toward teacher or other source.
6. ____	____	____	6. responds after first presentation – does not often ask for things to be repeated.
7. ____	____	____	7. understands materials presented through the visual channel (written/drawn).
8. ____	____	____	8. responds to questions within expected time period.
9. ____	____	____	9. follows two-or three-step directions.
10. ____	____	____	10. demonstrates understanding (verbally or nonverbally) of the main idea of a verbal presentation.
11. ____	____	____	11. comprehends *who, what, when where, why*, and *how* questions appropriate for age level.
12. ____	____	____	12. demonstrates understanding of vocabulary appropriate for age level.
13. ____	____	____	13. discriminates likenesses and differences in words (*toad-told*) and sounds (*t-d*).
14. ____	____	____	14. demonstrates understanding of temporal (*before/after*), position (*above/below*), and quantitative (*more/several*) concepts.
15. ____	____	____	15. understands subtleties in word or sentence meaning (idioms, figurative language).
16. ____	____	____	16. interprets meaning from vocal intonation.
17. ____	____	____	17. understands a variety of sentence structures (cause-effect passive voice – The ball was bounced by the girl.) and clauses (clause that modifies the subject: - The dog that chased the cat was hit.).

Source: Ohio Department of Education (1991). Ohio handbook for the identification, evaluation and placement of children with language problems. Used with permission

Teacher Checklist – Oral Expression

Student _____ Date _____ School _____
Date of Birth _____ Grade _____ Teacher _____

	YES	NO	SOMETIMES	THE STUDENT:
1.	____	____	____	1. states identifying information: name ( ), age ( ), birthday ( ), phone number ( ), and family information ( ).
2.				2. uses correct grammatical structure for a variety of purposes.
a.	____	____	____	a. formulates sentences correctly
b.	____	____	____	b. uses subject/verb appropriately
c.	____	____	____	c. uses verb tenses appropriately
d.	____	____	____	d. asks questions correctly – yes/no ( ) and "wh" questions ( )
e.	____	____	____	e. answers questions correctly – yes/no ( ) and "wh" questions ( )
f.	____	____	____	f. uses negation correctly
g.	____	____	____	g. uses pronouns correctly – personal ( ), demonstrative (this/that)
h.	____	____	____	h. formulates plurals correctly – regular ( ) and irregular ( )
3.	____	____	____	3. labels common objects correctly.
4.	____	____	____	4. uses age appropriate vocabulary.
5.	____	____	____	5. uses appropriate location ( ), temporal ( ) and quantitative ( ) expressions for age level (e.g., above/below, before/after, more/several).
6.	____	____	____	6. makes eye contact when speaking.
7.	____	____	____	7. carries on a conversation with appropriate voice level.
8.	____	____	____	8. knows how to begin, maintain, and end a conversation.
9.	____	____	____	9. restates thoughts in alternative form.
10.	____	____	____	10. yells stories or relates information in the proper sequence with beginning, middle, and/or end.
11.	____	____	____	11. uses speech rather than gestures to express self.
12.	____	____	____	12. speaks easily without seeming to be frustrated.
13.	____	____	____	13. accounts for listeners shared background when formulating expression (e.g., uses pronouns and articles only clear referents, gives enough information about the topic).
14.	____	____	____	14. responds correctly to humor ( ), sarcasm ( ) and figures of speech ( ).
15.				15. recognizes when to match voice level and intonation to a variety of situations:
a.	____	____	____	a. place (playground, classroom, assembly).
b.	____	____	____	b. intent (question/answer in class, show emotions, give reports).

Source: Ohio Department of Education (1991). Ohio handbook for the identification, evaluation and placement of children with language problems. Used with permission

Questionnaire for Assessing Auditory Processing

AUDITORY PROCESSING SKILLS	Rarely	Sometimes	Frequently
Has trouble rhyming words			
Has difficulty pronouncing words			
Has trouble learning letter-sound associations			
Has difficulty learning the days of the week and months of the year in sequence			
Has difficulty repeating information just heard			
Has trouble distinguishing letters with similar sounds in speech and when spelling (e.g., /b/ and /p/, /f/ and /v/)			
Has trouble pronouncing words with phonically regular patterns			
Has trouble ordering sounds in a correct sequence when spelling			
Has trouble pronouncing multisyllable words when speaking or reading			
Reads at a slow rate			

Adapted from: Learning Disabilities and Challenging Behaviors, Mather and Goldstein

Questionnaire for Assessing Visual Processing

VISUAL PROCESSING SKILLS	Rarely	Sometimes	Frequently
Forgets how letters look			
Confuses letters with similar appearance (e.g., *n* for *h*)			
Misreads little words in text (e.g., *were* for *where*)			
Reverses letters when writing (e.g., *b* for *d*)			
Transposes letters when reading or writing (e.g., *on* for *no*)			
Has trouble remembering basic sight words			
Has trouble copying from a book or a chalkboard to paper			
Spells the same word in different ways			
Spells words how they sound rather than how they look			
Reads at a slow rate			

Adapted from: Learning Disabilities and Challenging Behaviors, Mather and Goldstein

Areas of Processing Deficit and Their Link to Areas of Academic Achievement

Phonological Processing Model

Wagner, R.K., Torgesen, J.K., & Rashotte, C.A. (1999). Comprehensive Test of Phonological Processing. Austin, TX: PRO-ED; Wagner, R.K., Torgesen, J.K., & Rashotte, C.A. (1994). Development of reading-related phonological processing abilities: New evidence of bi-directional causality from a latent variable longitudinal study. Developmental Psychology, 30, 73-87; Wagner, R.K., & Torgesen, J.K. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. Psychological Bulletin, 101, 192-212.

Overview

The past decade has witnessed a profound advancement in the understanding of phonological processing – the kind of auditory processing that is most strongly related to mastery of written language (reading and writing), and is clearly implicated as the most common cause of reading disabilities. Phonological awareness, phonological memory, and rapid naming represent three correlated, yet distinct kinds of phonological processing abilities. Deficits in phonological awareness, phonological memory, and/or rapid naming are common in children with reading disabilities. These deficits appear to be the root of many decoding difficulties faced by individuals with reading disabilities.

Definition of Phonological Core Deficit

Phonological core deficits entail difficulties making use of phonological information when processing written or oral language. The major components of phonological deficits involve phonemic awareness (one's understanding of and access to the sound structure of language), sound-symbol relationships, and storage and retrieval of phonological information in memory.

Three Kind of Phonological Processing

Phonological Awareness: Phonological awareness refers to an individual's awareness of and access to the sound structure of his/her oral language. This awareness proceeds from word length phonological units in compound words (e.g., cowboy), to syllables within words, to onset-rimes units within syllables to individual phonemes within rimes, and finally to individual phonemes within consonant clusters.

Phonological Memory: Phonological memory refers to coding information phonologically for temporary storage in working memory. A deficient phonological memory does not appear to impair either reading or listening to a noticeable extent, provided the words involved are already in the individual's vocabulary. However, phonological memory impairments can constrain the ability to learn new written or spoken vocabulary.

Rapid Naming: Rapid naming of objects, colors, digits, or letters requires efficient retrieval of phonological information from long-term memory. The efficiency with which individuals are able to retrieve phonological codes associated with individual phonemes, word segments, or entire words should influence the degree to which phonological information is useful in decoding printed words. Measures of rapid naming require speed and processing of visual as well as phonological information. The skills involved

include efficient retrieval of phonological information from long-term memory and executing a sequence of operations quickly and repeatedly.

Double Deficit Hypothesis: It has been hypothesized that individuals who have double deficits – that is, deficits in both rapid naming and phonological awareness – appear to have greater difficulties learning to read than do individuals with deficits in either rapid naming or phonological awareness alone.

Link to Achievement

Reading: Deficits in phonological awareness are viewed as the hallmark of basic word reading disabilities. It is, however, the most responsive to intervention of the phonological processing skill areas. Phonological awareness skills should proceed from sensitivity to same verses, different or phonological segments, to an ability to identify and count phonological segments, to an ability to manipulate phonological segments.

Storage of phonological information during reading involves creating a sound-based representation of written words in working memory. Deficits in storage of phonological information result in faulty representations in memory, which lead to inaccurate application of sound rules during reading tasks. A deficit in phonological memory does not inevitably lead to poor reading of familiar material, but is more likely to impair decoding of new words, particularly words that are long enough to decode bit by bit as a means of storing intermediate sounds. A deficit in phonological memory may impair reading comprehension for more complex sentences.

Naming facility or "rapid automatic naming" is very important to reading achievement. Retrieval of phonological information from long-term memory refers to how the child remembers pronunciations of letters, word segments, or entire words. Reading disabled children may have difficulty in this area, which leads to slow and inaccurate recall of phonological codes from memory. Efficient retrieval of phonological information and execution of sequences of operations are required when readers attempt to decode unfamiliar words. Deficits in this area often result in difficulties with reading fluency.

Math: Some literature suggests that phonological deficits may be related to math disabilities. Phonological processing problems have been associated with difficulties memorizing basic math facts. The research, however, is not conclusive.

Written Expression: Phonological awareness provides students with an important tool for understanding the link between written and spoken language. Phonological memory impairments can constrain the ability to learn new written vocabulary.

Oral Language: Phonological memory impairments can constrain the ability to learn new oral vocabulary. It is likely to impair listening comprehension for complex sentences.

Carroll-Horn –Cattell (CHC)
Theory of Cognitive Processing

The following information was adapted from:
Flanagan, D. P., Ortiz, S. O., Alfonso, V. C. & Mascolo (2002). *The Achievement Test Desk Reference: Comprehensive Assessment and Learning Disabilities*. Boston: Allyn & Bacon.. Flanagan, D. P., & Ortiz, S. O. (2001). *Essentials of the cross battery approach*. New York: Wiley.. Flanagan, D. P., McGrew, K.S. & Ortiz, S. O. (2000). *The Weschler intelligence scale s and Gf-Gc theory: A contemporary approach to interpretation.* Boston: Allyn & Bacon.

Fluid Reasoning

Technical Definition

Fluid reasoning is the ability to use and engage in various mental operations when faced with a relatively novel task that cannot be performed automatically. It includes the ability to discover the underlying characteristic that governs a problem or set of materials, the ability to start with stated rules, premises, or conditions, and engage in one or more steps to reach a solution to a problem. It also affects the ability to reason inductively and deductively with concepts involving mathematical relations and properties.

User Friendly Description

Fluid Reasoning refers to a type of thinking that an individual may use when faced with a relatively new task that cannot be performed automatically. This type of thinking includes such things as forming and recognizing concepts (e.g., how are a dog, cat, and cow alike?), identifying and perceiving relationships (e.g., *sun is to morning* as *moon is to night*), drawing inferences (e.g., after reading a story, answer the question), and reorganizing or transforming information. Overall, this ability can be thought of as a problem-solving type of intelligence.

Link to Achievement

***Reading*:** Fluid reasoning or reasoning abilities have been shown to play a moderate role in reading. For example, the ability to reach general conclusions from specific information is important for reading comprehension.

Math: Fluid reasoning is related to mathematical activities at all ages. For example, figuring out how to set up math problems by using information in a word problem is important for math reasoning.

Written Expression: Fluid Reasoning skills are related to basic writing skills primarily in the elementary school years and are consistently related to written expression at all ages.

Crystallized Intelligence
(Comprehension Knowledge or Verbal Comprehension)

Technical Definition
Crystallized intelligence is the breadth and depth of a person's acquired knowledge of a culture and the effective application of this knowledge. It includes general language development or the understanding of words, sentences, and paragraphs (not requiring reading) in spoken native language, the extent of vocabulary that can be understood in terms of correct word meanings, the ability to listen to and comprehend oral communication, the range of general concepts, and the range of cultural knowledge (e.g., music, art).

User Friendly Description
Crystallized abilities refer to a person's knowledge base (or general fund of information) that has been accumulated over time. It involves knowledge of one's culture, as well as verbal or language-based knowledge that has been developed during general life experiences and formal schooling.

Link to Achievement
Reading: Crystallized abilities, especially one's language development, vocabulary knowledge, and the ability to listen are important for reading. This ability is related to reading comprehension in particular. Low crystallized abilities may hamper an individual's ability to comprehend written text due to a lack of vocabulary knowledge, basic concepts, and general life experiences that are needed to understand the text.

***Math*:** Crystallized abilities, including language development, vocabulary knowledge, and listening abilities are important to math achievement at all ages. These abilities become increasingly more important with age. Low crystallized abilities may hamper an individual's ability to comprehend word problems due to a lack of vocabulary knowledge. They may hamper one's ability to learn basic math processes, such as long division, due to impairments in one's ability to listen to and follow sequential directions.

***Written Expression*:** Crystallized abilities, such as language development, vocabulary knowledge, and general information are important to writing achievement primarily after age seven (7). These abilities become increasingly more important with age.

Oral Language: Crystallized abilities, especially one's language development, vocabulary knowledge, and the ability to listen are important for both listening comprehension and oral expression. Low crystallized abilities may hamper an individual's ability to comprehend oral communications due to a lack of vocabulary knowledge, basic concepts, and general life experiences that are needed to understand the information being presented.

Visual Processing

Technical Definition

Visual Processing is the ability to generate, perceive, analyze, synthesize, manipulate, transform, and think with visual patterns and stimuli. It includes the ability to perceive and manipulate visual patterns rapidly or to maintain orientation with respect to objects in space; the ability to manipulate objects or visual patterns mentally and to "see" how they would appear under altered conditions; the ability to combine disconnected, vague, or partially obscured visual stimuli or patterns quickly into a meaningful whole, without knowing in advance what the pattern is. It also includes the ability to survey a spatial field or pattern accurately and quickly, and identify a path through the visual field or pattern; the ability to form and store mental representations or images of visual stimulus and then recognize or recall it later; the ability to identify a visual pattern embedded in a complex visual array, when knowing in advance what the pattern is; and the ability to identify a pictorial or visual pattern when parts of the pattern are presented rapidly in order.

User Friendly Description

Visual processing is an individual's ability to think about visual patterns and visual stimuli (e.g., What is the shortest route from your house to school?). This type of cognitive processing ability also involves the ability to generate, perceive, analyze, synthesize, manipulate, and transform visual patterns and stimuli (e.g., Draw a picture of how this shape would look if I turned it upside-down.). Additionally, examples of this type of ability include putting puzzles together, completing a maze, and interpreting graphs or charts.

Link to Achievement

Math: Visual Processing may be important for tasks that require abstract reasoning or mathematical skills.

Short-Term Memory

Technical Definition

Short-term memory is the ability to apprehend and hold information in immediate awareness and then use it within a few seconds. Working memory, a subcomponent of short-term memory, includes the ability to attend to and immediately recall temporally ordered elements in corrected order after a single presentation, as well as the ability to store temporarily and perform a set of cognitive operations on information that requires divided attention.

User Friendly Description

Short-term memory is the ability to hold information in one's mind and then use it within a few seconds. A component of short-term memory is working memory. Working memory relates to an individual's ability to attend to verbally- or visually-presented information, to process information in memory, and then to formulate a response. Difficulties with working memory may make the processing of complex information more

time-consuming, draining a student's mental energies more quickly and perhaps result in more frequent errors on a variety of tasks.

Link to Achievement

Reading: Short-term memory is important to reading achievement. Reading comprehension, involving long reading passages, may be affected by skills specifically related to working memory. Basic word reading may be impacted by deficits in short-term memory because it may interfere with acquiring letter and word identification skills.

Math: Short-term memory is important to math computation skills. For example, deficits in short-term memory may impact one's ability to remember a sequence of orally presented steps required to solve long math problems (i.e., first multiply, then add, then subtract).

Written Expression: Short-term memory is important to writing. Memory span is especially important to spelling skills, where working memory has shown relations with advanced writing skills (e.g., written expression).

Oral Language: A student with short-term memory deficits may have problems following oral directions because they are unable to retain the information long enough to be acted upon. A student with short-term memory deficits also may have problems with oral expression because of difficulties with word-find or being unable to retain information long enough to verbally express it.

Long-Term Retrieval

Technical Definition

Long-term retrieval is the ability to store information (e.g., concepts, ideas, items or names) in long-term memory and to retrieve it later fluently through association. It includes the ability to recall part of a previously learned unrelated pair of items when the other part is presented (i.e., paired-associative learning); the ability to produce rapidly a series of ideas, words, or phrases related to specific conditions or objects; the ability to draw or sketch several examples or elaborations rapidly when given a starting visual stimulus; and the ability to produce names for concepts rapidly. It also includes the ability to recall as many unrelated items as possible in any order after a large collection of items is presented; and the ability to recall a set of items where there is a meaningful relationship between items or the items create a meaningful connected discourse.

User Friendly Description

Long-term retrieval refers to an individual's ability to take and store a variety of information (e.g., ideas, names, concepts) in one's mind, and then later retrieve it quickly and easily at a later time using association. This ability does not represent what is stored in long-term memory. Rather, it represents the process of storing and retrieving information.

Link to Achievement

Reading: Long-term retrieval abilities are particularly important for reading. For example, elementary school children who have difficulty naming objects or categories of objects rapidly may have difficulty in reading. Associative memory abilities also play a role in reading achievement (i.e., being able to associate a letter shape to its name and its sound).

Math: Long-term retrieval abilities are important to math calculation skills. For example, students with deficits in long-term retrieval may have difficulty recalling basic addition, subtraction, multiplication, and/or division facts when encountered within a math problem.

Written Expression: Long-term retrieval abilities and naming facility in particular have demonstrated relations with written expression, primarily with the fluency aspect of writing.

Auditory Processing

Technical Definition

Auditory processing is the ability to perceive, analyze, and synthesize patterns among auditory stimuli. It includes the ability to process sounds, as in identifying, isolating, and analyzing sounds; the ability to process speech sounds, as in identifying, isolating, and blending or synthesizing sounds; and the ability to detect differences in speech sounds under conditions of little distraction or distortion.

User Friendly Description

Auditory processing refers to the ability to perceive, analyze, and synthesize a variety of auditory stimuli (e.g., sounds).

Link to Achievement

Reading: Auditory processing or "phonological awareness/processing" is very important to reading achievement or reading development. Students who have difficulty with processing auditory stimuli may experience problems with learning grapheme-to-phoneme correspondence, reading non-sense words, and decoding words due to an inability to segment, analyze, and synthesize speech sounds. Older students will usually have continued problems with decoding unfamiliar words.

Written Expression: Auditory processing is also very important for both writing skills and written expression. Students who are weak in auditory processing abilities may have difficulty spelling since this skill requires the ability to attend to the detailed sequence of sounds in words.

Oral Language: Auditory processing deficits may be linked to academic difficulties with listening comprehension. Students may have difficulty interpreting lectures, understanding oral directions, and learning a foreign language.

Processing Speed

Technical Definition

Processing speed is the ability to perform cognitive tasks fluently and automatically, especially when under pressure to maintain focused attention and concentration. It includes the ability to search for and compare visual symbols rapidly, when presented side-by-side or separated in a visual field; the ability to perform tests that are relatively easy or that require very simple decisions rapidly; and the ability to manipulate and deal with numbers rapidly and accurately.

User Friendly Description

Processing speed provides a measure of an individual's ability to process simple or routine visual information quickly and effectively and to quickly perform tasks based on that information. When information is processed slowly, competing stimuli in immediate awareness may cause overload stress on short-term memory. Tasks that involve multiple, complex processes can be particularly confusing and frustrating. Completing tests and assignments within the usual time constraints can also be difficult even when the student has adequate skills and knowledge.

Link to Achievement

Reading: Perceptual speed is important during all school years, particularly the elementary school years. Slow processing speed may impact upon reasoning skills since the basic rapid process of symbols (e.g., letters) is often necessary for fluent reading.

Math: Processing speed is important to math achievement during all school years, particularly the elementary school years. Slow processing speed leads to a lack of automaticity in basic math operations (e.g., addition, subtraction, and multiplication).

Written Expression: Perceptual speed is important during all school years for basic writing and related to all ages for written expression.

Neuropsychological Functional Approach

The following information was adapted from Korkman, M., Kirk, U., & Kemp, S. (1998). The *NEPSY* Manuel. The Psych Corporation

Attention/Executive Functions

Attention involves the regulation of arousal and vigilance, selective attention, sustained attention, attention span, as well as inhibition and control of behavior. Executive functioning allows for the planning and implementation of complex tasks. In so doing, one is able to monitor performance and correct errors while simultaneously maintaining awareness of task relevant information in the presence of irrelevant information. These abilities are essential to virtually all areas of academic performance.

Language Functions

Language functions include phonological processing, receptive language comprehension, understanding of the syntactic structure of language, automaticity with which semantic memory can be accessed (naming) and ease and facility of language production. Cognitive processing deficits in this area may be related to difficulty recognizing phonological segments of words, difficulty in decoding, difficulty in word find or naming (accessing semantic memory automatically), and language comprehension. Academic areas affected by these weaknesses would include basic reading skills, reading comprehension, written expression, listening comprehension, oral expression, and math reasoning where the math problem is encoded in language.

Sensory Functions

Sensory functions are those functions or systems that mediate or bring about the production of speed, smooth and efficient limb and whole body movement, and dexterous movements of the hands and fingers, as well as systems that mediate equilibrium and sensory input at the tactile level and eye movement. Deficits in these areas are primarily related to math calculations and penmanship. Some studies have reported significant correlations between performance on finger discrimination and reading ability.

Visuospatial Processing

Visuospatial processing could be succinctly defined as visual comprehension, problem solving, and reasoning. It consists of many distinct but interrelated subcomponents, (e.g. visualization, location, directionality, copying, rotating objects mentally, understanding symbolic representations of external space, etc.). Deficits in these processing abilities have been associated with difficulties performing math calculations that present the student with numbers, charts, and math signs, as well as penmanship.

Memory and Learning

Memory includes the ability to encode, store, and retrieve verbal and nonverbal information. While classic definitions of learning may be viewed as synonymous with memory, psychologists frequently view learning as changes in the amount of information remembered from one trial to the next. Specific memory problems appear to be rare in children with developmental learning disorders. Memory problems occur more frequently as secondary deficits in attention, verbal processing and visual perception, or are a function of low global intelligence. Nevertheless, children with reading disabilities frequently have limited auditory memory span.

CHC Worksheets

The following CHC – Cross Battery worksheets are provided primarily to serve as a guide to help determine which subtests measure a particular processing area. They ***do not*** have to be used solely for Cross Battery Assessments. They can be used to help you determine the student's learning style or document a processing deficit for purposes of program planning.

Note: There are achievement and cognitive tests listed. You should not use the same achievement subtest utilized to document a severe discrepancy to also document a cognitive processing deficit.

The information on the worksheets was adapted from listed sources. Subtests printed in **bold** are **moderate to strong measures** as defined empirically; subtests printed in regular face print were classified logically. The following resources may provide additional information for cross-battery analysis of tests.

Dumont, R. & Willis, J. (2002). CBA Templates. Available online: http:// alpha.fdu.edu/psychology or www.iapsych.com

Flanagan, D. P., Ortiz, S. O., Alfonso, V. C. & Mascolo. (2002). *The Achievement Test Desk Reference: Comprehensive Assessment and Learning Disabilities*. Boston: Allyn & Bacon.

Flanagan, D. P., & Ortiz, S. O. (2001). *Essentials of the cross battery approach*. New York: Wiley.

Flanagan, D. P., McGrew, K.S. & Ortiz, S. O. (2000). *The Wechsler Intelligence Scales and Gf-Gc Theory: A contemporary approach to interpretation.* Boston: Allyn & Bacon.

Key for reliability descriptions: High ≥ 90; Moderate ≥ 80; Low ≤ 79.

If you choose to use a Cross Battery approach, the following guidelines can be used to calculate the CHC narrow ability averages:

Step 1: Enter the subtest score in the SS column.
Note: If the SS was based on a scale other than 100±15, record the score in the column marked with *, then convert the score to the scale of 100±15 and record the new score in the next column.

Step 2: Sum the scores of the subtests in the converted column and place the total in the space provided.

Step 3: Enter the number of subtests that comprised the converted column sum.

Step 4: Divide the sum by the # of subtests and enter that number in the space provided.

Follow the same procedure for determining the broad ability average utilizing the average of each narrow ability assessed. BEST PRACTICE for Cross Battery assessments recommends selecting subtests from at least two different narrow abilities comprising each broad ability.

Fluid Intelligence: the ability to use and engage in various mental operations when faced with a relatively novel task that cannot be performed automatically and includes:

I. Induction: the ability to discover the underlying characteristic that governs a problem or set of materials

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5-17	Nonverbal Matrices			
CTONI	6-18	Geometric Sequences			
DAS	6-17	**Matrices**	Moderate age 7-17		
DAS	2-7	Picture Similarities	Moderate ages 2-3; Low ages 4-7		
KAIT	11-18+	**Mystery Codes**	Moderate ages 12-18+		
Leiter-R	2-6	Classification			
Leiter-R	5-18	Design Analogies			
Leiter-R	2-18	Repeated Patterns			
Leiter-R	2-18	Sequential Order			
SB:V		**Fluid Reasoning (Verbal Absurdities)**			
SB:V		**Fluid Reasoning (Verbal Analogies)**			
UNIT	5-17	**Analogic Reasoning**	Moderate to High – ages 5-17;		
WAIS III	16-18+	**Matrix Reasoning**	Moderate ages 16-18		
WJIII	2-18+	**Concept Formation**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Induction Average					

II. General Sequential Reasoning: the ability to start with stated rules, premises or conditions and engage in one or more steps to reach a solution to a problem

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
KAIT	11-18+	**Logical Steps**	Medium ages 11-18		
Leiter-R	2-10	Picture Context			
Lieter-R	6-18	Verbal Coding			
UNIT	5-17	**Cube Design**	High ages 5-17		
WJIII	4-90	**Analysis-Synthesis**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. General Sequential Reasoning Average					

III. Quantitative Reasoning: the ability to reason inductively and deductively with concepts involving mathematical relations and properties

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
DAS	6-17	**Sequential & Quant. Reasoning**	Medium ages 6-17		
SB:V	Level 2+	**Quantitative Reasoning (Nonverbal)**			
SB:V	Level 2+	Quantitative Reasoning (Verbal)			
WIAT-II	4-18+	Mathematical Reasoning			
WJIII Ach	2-18+	**Applied Problems**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Quantitative Reasoning Average					

Fluid Intelligence Average

1. Sum of I, II, III	
2. Divide by number assessed	
3. Fluid Intelligence Average	

Link to Achievement: Specifically, inductive and general sequential reasoning play a moderate role in reading comprehension. All areas are consistently very important at all age with math achievement. Induction and general sequential reasoning are related primarily to basic writing skills primarily in the elementary school years and consistently related to written expression at all ages.

Crystallized Intelligence: the breadth and depth of a person's acquired knowledge of a culture and the effective application of this knowledge and includes:

I. Language Development: the general development, or the understanding of words, sentences, and paragraphs (not requiring reading) in spoken native language

Test	Age	Subtest	Reliability	SS*	SS (100+ 15)
DAS	6-17	**Similarities**	Moderate ages 5-6, 12-13; Low ages 7-11, 14-17		
DAS	2-5	Verbal Comprehension	Moderate ages 2-5		
WPPSI-R	3-7	**Comprehension**	Moderate ages 3-5; Low ages 6-7		
WISC-IV	6-16	**Comprehension**	Low ages 6-16		
WAIS-IV	16-18+	**Comprehension**	Moderate ages 16-18+		
WPPSI-R	3-7	**Similarities**	Moderate ages 3-5; Low ages 7-8		
WAIS-IV	16-18+	**Similarities**	Moderate ages 16-18+		
WISC-IV	6-16	**Similarities**	Moderate ages 6-16		
SB:V	Level 2+	**Knowledge (Picture Absurdities)**			
Other					
		1. Sum of column			
		2. Divide by number of Tests			
		3. Language Development Average			

II. Lexical Knowledge: the extent of vocabulary that can be understood in terms of correct word meanings

Test	Age	Subtest	Reliability	SS*	SS (100+ 15)
DAS	6-17	**Word Definitions**	Moderate ages 6-16		
DAS	2-7	Naming Vocabulary	Low ages 2-4, 6-7; Moderate age 5		
NEPSY	3-4	Body Part Naming			
WPPSI-R	3 -7	**Vocabulary**	Moderate ages 3-5; Low ages 6-7		
WISC-IV	6 -16	**Vocabulary**	Moderate ages 6-12, 16; High ages 13-15		
WAIS-III	16-18+	**Vocabulary**	High ages 16-18+		
SB:V	2-18+	**Knowledge (Vocabulary)**			
SB:V	2-18+	**Knowledge (Procedural Knowledge)**			
WJIII Cog	2-18+	**Verbal Comprehension**			
WJIII Ach	2-18+	**Picture Vocabulary**			
Other					
		1. Sum of column			
		2. Divide by number of Tests			
		3. Lexical Knowledge Average			

III. Listening Ability: the ability to listen to and comprehend oral communication

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
NEPSY	3-12	Comp of Instruction			
WJIII Ach	4-18+	**Oral Comp**			
WJIII Ach	2-18+	**Understanding Directions**			
WIAT-II	4-19	Listening Comprehension			
Other					
		1. Sum of column			
		2. Divide by number of Tests			
		3. Listening Ability Average			

IV. General Information: the range of general concepts

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
WPPSI-R	3-7	**Information**	Moderate ages 3-4; Low ages 4-7		
WISC-IV	6-16	**Information**	Low ages 6-8; Moderate ages 9-16		
WAIS-III	16-18+	**Information**	Moderate ages 16-18+		
WJIII Cog	2-18+	**General Information**			
WJIII Ach	2-18+	**Academic Knowledge**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. General Information Average					

V. Information About Culture: the range of cultural knowledge (e.g., music, art)

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
KAIT	11-85+	**Famous Faces**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Information About Culture Average					

VI. Communication Ability: the ability to speak in "real life" situations

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
OWLS	3-18+	Oral Expression			
WIAT II	4-19	Oral Expression			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Information About Culture Average					

Crystallized Intelligence Average

1. Sum of I, II, III, IV, V	
2. Divide by number assessed	
3. Crystallized Intelligence Average	

Link to Achievement: Language development, lexical knowledge and listening abilities are important to reading and math achievement at all ages. These abilities become increasingly more important with age. Language development, lexical knowledge and general information are important to writing achievement primarily after age 7. These abilities become increasingly more important with age.

Visual Processing: the ability to generate, perceive, analyze, synthesize, manipulate, transform, and think with visual patterns and stimuli and includes:

I. Spatial Relations: the ability to perceive and manipulate visual patterns rapidly or to maintain orientation with respect to objects in space

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
DAS	3-17	Pattern Construction	Moderate ages 3-9; High ages 10-17		
Key Math	5-18+	Geometry			
Leiter-R	11-18+	Figure Recognition			
SB:V	2-18+	**Visual-Spatial Processing**			
UNIT	5-17	Cube Design	High Ages 5 -17		
WPPSI-R	3-7	**Block Design**	Moderate ages 3-7		
WISC-IV	6-16	**Block Design**	Moderate ages 6-13; High ages 14-16		
WAIS III	16-18+	**Block Design**	Moderate ages 16-18+		
Other					
	1. Sum of column				
	2. Divide by number of Tests				
	3. Spatial Relations Average				

II. Visualization: the ability to manipulate objects or visual patterns mentally and to "see" how they would appear under altered conditions

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
DAS	4-5	Matching Letter Like Forms	Moderate ages 4-5		
DAS	2-3	Block Building	Low ages 2-3		
Leiter-R	2-10	Matching			
Leiter-R	2-10	Form Completion			
Leiter-R	2-10	Paper Folding			
NEPSY	3-12	Block Construction			
WPPSI -R	3-7	Geometric Design	Moderate ages 3-4; Low ages 5-7		
WJIII Cog	4-18+	**Spatial Relationships**			
Other					
	1. Sum of column				
	2. Divide by number of Tests				
	3. Visualization Average				

III. Closure Speed: the ability to combine disconnected, vague, or partially obscured visual stimuli or patterns quickly into a meaningful whole, without knowing in advance what the pattern is

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
WPPSI-R	3-7	**Object Assembly**	Low ages 3-7		
WISC-IV	6-16	**Object Assembly**	Low ages 6-16		
WAIS III	16-18+	**Object Assembly**	Low age 16-18+		
Other					
	1. Sum of column				
	2. Divide by number of Tests				
	3. Closure Speed Average				

IV. Spatial Scanning: the ability to survey a spatial field or pattern accurately and quickly and identify a path through the visual field or pattern

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
NEPSY	5-12	Route Finding			
UNIT	5-17	**Mazes**	Moderate ages 5-17;		
WPPSI-R	3-7	**Mazes**	Moderate age 3; Low ages 4-7		
WISC-IV	6-16	**Matrix Reasoning**			
WISC-IV	6-16	**Symbol Search**			
Other					
	1. Sum of column				
	2. Divide by number of Tests				
	3. Spatial Scanning Average				

V. Visual Memory: the ability to form and store mental representation or image of visual stimulus and then recognize or recall it later

Test	Age	Subtest	Reliability	SS*	SS (100+15)
CMS	5-16	Dot Location	Moderate age 5 ; Low ages 6-16		
CMS	5-16	Dot Location 2	Low ages 5-16		
CMS	5-16	Picture Location	Low ages 5-9, 11-16; Moderate age 10		
DAS	6-17	**Recall Design**	Moderate ages 6-17		
DAS	3-7	Recognition of Pictures	Low ages 3-6		
KAIT	11-18+	**Memory for Block Design**	Low ages 12-18+		
Leiter R	4-10	Immediate Recognition			
Leiter R	2-18	Forward Memory			
NESPY	3-12	Imitating Hand Positions			
SBV	2-18+	**Working Memory (Block Span)**			
TOMAL	5-19	Facial Memory			
TOMAL	5-19	Abstract Visual Memory			
TOMAL	5-19	Del. Rec: Visual Sel. Reminding			
TOMAL	5-19	Manual Manipulation			
UNIT	5-17	**Object Memory**	Moderate to High 5-17		
UNIT	5-17	**Spatial Memory**	High 5-17		
UNIT	5-17	**Symbolic Memory**	High 5-17		
WJ III Cog	4-18+	**Picture Recognition**			
WRAML	5-17	Picture Memory			
WRAML	5-17	Design Memory			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Visual Memory Average					

VI. Flexibility of Closure: the ability to identify a visual pattern embedded in a complex visual array, when knowing in advance what the pattern is

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5-17	**Figure Memory**			
Leiter R	2-18	Figure Ground			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Flexibility of Closure Average					

VII. Serial Perceptual Integration: the ability to identify a pictorial or visual pattern when parts of the pattern are presented rapidly in order

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5-17	**Verbal Spatial Relations**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Serial Perceptual Integration Average					

Visual Processing Average

1. Sum of I, II, III, IV, V, VI, &/or VII	
2. Divide by number assessed	
3. Visual Processing Average	

Link to Achievement: Visual Processing may be important for higher level or advanced mathematics (e.g., geometry, calculus.) It is not related to writing achievement.

Auditory Processing – the ability to perceive, analyze, and synthesize patterns among auditory stimuli and includes:

I. Phonetic Coding Analysis: the ability to process sounds, as identifying, isolating, and analyzing sounds

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CTOPP	5-24	Elision	Moderate ages 5-7; Low ages 8-17		
CTOPP	5-7	Sound Matching	Moderate ages 5-7		
CTOPP	7-24	Segmenting Words	Low ages 8-17		
CTOPP	7-24	Segmenting Nonwords	Moderate ages 8-17		
NEPSY	3-12	Phonological Processing			
WJIII Ach	4-90	**Sound Awareness**			
WJIII Cog	2-90	**Incomplete Words**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Phonetic Coding Analysis Average					

II. Phonetic Coding Synthesis: the ability to process speech sounds, as in identifying, isolation, and blending or synthesizing sounds

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CTOPP	5-24	Blending Words	Moderate ages 5-7; Low ages 8-17		
CTOPP	5-24	Blending Nonwords	Moderate ages 5-7; Low ages 8-17		
WJIII Cog	4-90	**Sound Blending**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Phonetic Coding Synthesis Average					

III. Speech/General Sound Discrimination: the ability to detect differences in speech sounds under conditions of little distraction or distortion

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
WJIII Cog		**Auditory Attention**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Speech/General Sound Discrimination Average					

Auditory Processing Average

1. Sum of I, II, &/or III	
2. Divide by number assessed	
3. Auditory Processing Average	

Link to Achievement: Phonetic coding or "phonological awareness/processing" is very important to reading achievement during the elementary school years. It is also very important during the elementary school years for both writing skills and written expression (primarily before age 11).

Processing Speed – the ability to perform cognitive tasks fluently and automatically, especially when under pressure to maintain focused attention and concentration and includes:

I. Perceptual Speed: the ability to search for and compare visual symbols rapidly when presented side-by-side or separated in a visual field

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5 -17	**Receptive Attention**			
CAS	5 -17	**Planned Connections**			
Leiter-R	2 -18	Attention Sustained			
WISC-IV	6 -16	**Symbol Search**	Low ages 6-14; Moderate ages 15-16		
WAIS-IV	16-18+	**Symbol Search**	Low ages 16-18+		
WJIII Cog	2 - 90	**Visual Matching**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Perceptual Speed Average					

II. Rate-of-Test-Taking the ability to perform tests that are relatively easy or that require very simple decisions rapidly

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5 -17	**Planned Codes**			
WISC IV		**Cancellation**			
WAIS IV		**Symbol Search**			
WJIII Cog	4 -18+	**Decision Speed**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Rate-of-Test-Taking Average					

III. Number Facility: the ability to manipulate and deal with numbers rapidly and accurately

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5-17	**Matching Numbers**			
CAS	5-17	**Number Detection**			
DAS	6-17	Speed of Information Processing	Moderate ages 5-8; High ages 9-17		
WJIII Ach	7-18+	**Math Fluency**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Number Facility Average					

Processing Speed Average

1. Sum of I, II, III	
2. Divide by number assessed	
3. Processing Speed Average	

Link to Achievement: Perceptual speed is important to reading and math achievement during all school years, particularly the elementary school years. Perceptual speed also is important during all school years for basic writing and related to all ages for written expression.

Short-Term Memory – the ability to apprehend and hold information in immediate awareness and then use it within a few seconds and includes:

I. Memory Span: the ability to attend to and immediately recall temporally ordered elements in corrected order after a single presentation

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5 - 17	**Word Series**			
CAS	5 - 17	**Sentence Repetition**			
CAS	5- 17	**Sentence Questions**			
CMS	5 - 16	Numbers	Low ages 5-6, 8-9; Moderate ages 7, 10-16		
CMS	5 - 16	Stories	Low ages 5-16		
CTOPP	5 - 24	Memory for Digits			
CTOPP	5 - 24	Non-word Repetition			
DAS	3 - 17	Recall of Digits	Moderate ages 3-17		
NEPSY	5 - 12	Repetition of Nonsense Words			
NEPSY	3 - 12	Sentence Repetition			
SB:V	7 - 24	**Working Memory (Block Design)**			
TOMAL	5 - 18+	Digits Forward			
TOMAL	5 - 18+	Letters Forward			
WISC-IV	6 - 16	**Digit Span**			
WISC-IV	6 - 16	**Letter-Number Sequencing**			
WPPSI-R	3-7	**Sentences**	Moderate ages 3-4; Low ages 5-7		
WJIII Cog	4 - 18+	**Memory for Words**			
WRAML	5 - 17	Number/Letter Memory			
Other					
		1. Sum of column			
		2. Divide by number of Tests			
		3. Memory Span Average			

II. Working Memory: the ability to store temporarily and perform a set of cognitive operations on information that requires divided attention and the management of limited capacity on short-term memory

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CTOPP	7 - 24	Phoneme Reversal			
CMS	5 - 16	Sequences	Moderate ages 5-6, 8-14; Low ages 7, 15-16		
NEPSY	5 - 12	Knock and Tap			
WAIS III	16 - 18+	**Letter-Number Sequence**	Moderate ages 16-18+		
SB:V		**Working Memory (Memory for Sentences)**			
SB:V		**Working Memory (Last Word)**			
WJIII Cog	4 - 18+	**Auditory Working Memory**			
WJIII Cog	4 - 18+	**Numbers Reversed**			
Other					
		1. Sum of column			
		2. Divide by number of Tests			
		3. Working Memory Average			

Short Term Memory Average

1. Sum of I, II, III, IV, V, VI, &/or VII	
2. Divide by number assessed	
3. Short Term Memory Average	

Link to Achievement: Memory span is important to both reading and math achievement especially when evaluated within the context of working memory. Memory span is important to writing, especially spelling skills, where as working memory has show relations with advanced writing skills (e.g., written expression)

Long Term Retrieval – the ability to store information (e.g., concepts, ideas, items, or names) in long-term memory and to retrieve it later fluently through association and includes:

I. Associative Memory: the ability to recall part of a previously learned unrelated pair of items when the other part is presented (i.e., paired-associative learning)

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CMS	5 - 16	Word Pairs	High age 5, 13-14; Moderate ages 6-12, 15-16		
CMS	5 - 16	Word Pairs 2	Low ages 5-8; Moderate ages 9-12; High ages 13-16		
KAIT	11-18+	**Rubus Learning**	High ages 11-18+		
KAIT	11-18+	**Rubus Delayed Recall**	High ages 11-18+		
Leiter R	4 - 10	Delayed Recognition			
Leiter R	2 - 18	Associated Pairs			
Leiter R	6 - 18	Delayed Pairs			
NEPSY	5 - 12	Memory for Names			
TOMAL	5 - 19	Paired Recall			
WJIII	2 - 18+	**Visual-Aud Learning**			
WJIII	4 - 18+	**Del. Rec: Vis-Aud Lrng**.			
WRAML	5 - 17	Sound Symbol			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Associative Memory Average					

II. Ideation Fluency: the ability to produce rapidly a series of ideas, words, or phrases related to specific conditions or objects

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
WJIII Cog	2-90	**Retrieval Fluency**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Ideation Fluency Average					

III. Figural Fluency: the ability to draw or sketch several examples or elaborations rapidly when given a starting visual stimulus

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
NEPSY	5-12	Design Fluency			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Figural Fluency Average					

IV. Naming Fluency: the ability to produce names for concepts rapidly

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CAS	5-17	Expressive Attention			
CTOPP	5-24	Rapid Object Naming			
CTOPP	5-24	Rapid Color Naming	Low ages 5-7; Moderate ages 8-17		
CTOPP	7-24	Rapid Letter Naming	High ages 5-7; Low ages 8-17		
CTOPP	7-24	Rapid Digit Naming	High ages 5-7; Moderate ages 8-17		
NEPSY	5-12	Speeded Naming			
WJIII Cog	4-90	**Rapid Picture Naming**			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Naming Fluency Average					

V. Free Recall Memory: the ability to recall as many unrelated items as possible, in any order, after a large collection of items is presented.

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CMS	5-16	Word Lists	Moderate ages 5-16		
CMS	5-16	Word Lists 2	Low ages 5-9; 11-12, 15-16; Moderate ages 10, 13-14		
DAS	4-17	Recall Objects	Moderate ages 3-9; High ages 10-17		
NEPSY	7-12	List Leaning			
TOMAL	5-19	Word Selective Reminding			
TOMAL	5-19	Del. Rec: Word Selective Rem.			
WRAML	5-17	Verbal Learning			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Free Recall Memory Average					

VI. Meaningful Memory: the ability to recall a set of items where there is a meaningful relationship between items or the items create a meaningful connected discourse.

Test	Age	Subtest	Reliability	SS*	SS (100 + 15)
CMS	5-16	Stories 2	Low ages 5-16		
WJIII Ach	2-90	Story Recall			
WJIII Ach	2-90	Story Recall Delayed			
Other					
1. Sum of column					
2. Divide by number of Tests					
3. Meaningful Memory Average					

Long Term Retrieval Average

1. Sum of I, II, III, IV, V, &/or VI	
2. Divide by number assessed	
3. Long Term Retrieval Average	

Link to Achievement: Naming facility or "rapid automatic naming" is very important to reading achievement during the elementary school years. Associative memory may be somewhat important to reading achievement at select ages (e.g., age 6). Naming facility also has demonstrated relations with written expression, primarily the fluency aspect of writing.

Secondary LD Evaluation Using the Cattell-Horn-Carroll Model

Assessment Personnel: _____ Student: _____C.A.: _____

	Factor	Test	Subtest Name	Subtest Score	Conv. Score	Avg. Score	Level	Description
HIGHER-LEVEL PROCESSING AND REASONING	Gf	WAIS-III	Matrix Reasoning					Fluid Reasoning
		WJ-III	Concept Formation					
	Glr	WJ-III	Verbal-Auditory Learning					Long-term Retrieval
		WJ-III	Retrieval Fluency					
	Ga	WJ-III	Sound Blending					Auditory Processing
		WJ-III	Incomplete Words					
		WJ-III	Sound Awareness					
	Gv	WAIS-III	Block Design					Visual Processing
		WAIS-III	Object Assembly					
AUTOMATIC PROCESSES	Gsm	WAIS-III	Digit Span					Short Term Memory
		WAIS-III	Letter-Number Sequencing					
	Gs	WAIS-III	Digit Symbol: Coding					Processing Speed
		WAIS-III	Symbol Search					
ACQUIRED KNOWLEDGE AND ACHIEVEMENT	Gc	WAIS-III	Vocabulary					Crystallized Ability (verbal reasoning, lang. ability, general knowledge)
		WAIS-III	Similarities					
		WAIS-III	Information					
		WAIS-III	Comprehension					
	Gq	WAIS-III	Arithmetic					Quantitative Ability and Math Achievement
		WJ-III	Math Fluency					
		WJ-III	Applied Problems					
	Grw	WJ-III	L-W Identification					Literacy Skills: Reading
		WJ-III	Word Attack					
		WJ-III	Reading Fluency					
		WJ-III	Passage Comprehension					Writing
		WJ-III	Spelling					
		WJ-III	Spelling of Sounds					
		WJ-III	Writing Fluency					
		WJ-III	Writing Samples					

Conv. Score refers to subtest scores converted to a common scale. Only converted scores can be averaged.

Tests to administer:
WAIS-III (all subtests)
WJ-III Cognitive (Tests 2, 4, 5, 8, 12)
WJ-III Achievement (Tests 1, 2, 6, 7, 8, 9, 10, 11, 13, 20, 21)
Math: Tests 6, 10 Reading: Tests 1, 2, 9, 13, 21 Writing: Tests 7, 8, 11, 20

Form developed by Catherine A. Fiorello, Ph.D. Material adapted from Mather, N., & Woodcock, R. W. (2001). Examiner's Manual. Woodcock-Johnson III Tests of Cognitive Abilities. Itasca, IL: Riverside Publishing; and McGrew, K. S. (1997). Analysis of the major intelligence batteries according to a proposed Gf-Gc framework. In Flanagan, Genshaft, and Harrison, Contemporary intellectual assessment

A Sampling of Math Tests

	Paper & Pencil Computation	Mental Arithmetic	Math Vocabulary	Math Fluency	Applications with paper and pencil	Applications without paper and pencil	Norms for Calculator Use	Norms for Corrections	Norms
KTEA[2]	yes				yes				Both[1]
WIAT-II	yes				*yes*				Both[1]
PIAT		*mlt-chc*				mlt-chc			Both[1]
WJ III	yes		*yes*	yes	*yes*				Both
WRAT	yes								Age
DAS	yes				*a few*				Both[1]
KeyMath	yes	*yes*	*yes*			yes			Both[1]

Italics – time limits

* scores are very strongly influenced by the amount written in 15 minutes

1. Seasonal grade norms.
2. Comprehensive Form; the Brief Form combines computation and applications.

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The organization of these tables is borrowed from Table 11.1, p. 308 in Brody, S. (Ed) (2001). Teaching reading: Language, letters & thought (2nd ed)

A Sampling of Reading Tests[2]

	Word List	Nonsense Words	Oral Reading Accuracy	Reading Speed	Reading Vocabulary	Compre-hension: Oral	Compre-hension: Silent	Listening Compre-hension	Spelling	Phon-emic Skills	Norms
Woodcock-Johnson III	untimed	untimed		sentences	oral resp.		Cloze	both	two	several	both[3]
Woodcock Reading Master Tests-Revised	*timed*	*timed*			oral resp.		Cloze				both[2]
Diagnostic Reading Scales – 81 Spache	timed	untimed	passages	passages		passages	passages	passages		yes	grade[4]
Gray Oral Reading Test 4th edition			passages	passages		mlt-chc					age
Gray Silent Reading Test							mlt-chc				age
Diagnostic Assessments of Reading	untimed	note*	passages				passages	vocabulary	yes	yes	grade[3]
Wechsler Individual Achievement Test II	untimed						passages	passages	yes		both[5]
Kaufman Test of Ed. Achievement[6]	untimed						passages		yes		both[4]
Test of Reading Comprehension 3rd ed					several		mlt-chc				age
Peabody Individual Achievement Test-Revised	untimed						sentences		mlt-chc.		both[4]
Goldman-Fristoe Woodcock		untimed							yes	yes	age
Gates-MacGinitie Reading Tests 4th ed.					*mlt-chc*		*mlt-chc*				grade[4]
Nelson-Denny Reading Test				one min.	*mlt-chc*[7]		*mlt-chc*[6]				grade[4]
Differential Ability Scales	untimed										both[4]
Slosson Oral Reading Test-Rev	*timed*										both[4]
Wide Range Achievement Test-3rd ed.	*timed*										age

Italics – time limits

Underscored subtests require the student to answer from memory without the item available for review

*The Diagnostic Assessments of Reading with Trial Teaching Strategies (DARTTS) offers extensive, brief lists of real words designed to assess a broad variety of specific phonetic word attack skills and a set of brief lessons in those skills to be tried with the student by the evaluator.

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[2] The organization of these tables is borrowed from Table 11.1, p. 308 in Brody, S. (Ed) (2001). Teaching reading: Language, letters & thought (2nd ed).
[3] Norms are in one-month intervals.
[4] Scores are criterion-referenced and/or based on the grade-level designation of the most difficult selection for which the student meets the scoring criteria.
[5] Grade norms are seasonal.
[6] Comprehensive Form; the Brief Form combines oral word-list reading and comprehension in one score which is not useful for diagnosis.
[7] Norms available for extended time.

A Sampling of Tests Measuring Aspects of Phonological Awareness

Melissa Farral, Ph.D. & Sara Brody, Ed.D.

TESTS	rapid naming	word discri-mination	rhyming	segmen-tation	isolation	deletion	substi-tution	blending	graph-emes
Test of Auditory-Perceptual Skills – Revised (TAPS-R) Auditory Word Discrimination Subtest: identifying whether two words spoken by examiner are SAME or DIFFERENT		X							
Test of Phonological Awareness (TOPA): Marking pictures of orally presented words that are distinguished by the same or different sound in the word-final position					X				
Rosner Test of Auditory Analysis Skills (TAAS): Say "cowboy" without the "cow." Say "picnic" without the "pic." Say "cart" without the " /t/." Say "blend" without the "/bl/."						X			
Lindamood Auditory Conceptualization Test (LAC): Using colored blocks to represent differences or changes in sequences of speech sounds							X		
Woodcock-Johnson III (WJ III): Incomplete Words, Sound Blending, Auditory Attention, Auditory Working Memory, Rapid Picture Naming, Word Attack, Spelling of Sounds, Sound Awareness	X	X	X	X	X	X	X	X	X
Goldman-Fristoe-Woodcock Auditory Skills Test Battery (GFW) Listening to taped words and pointing to a matching picture, repeating specified sounds in taped words, reading and spelling nonsense words, other auditory tasks		X			X			X	X
Roswell-Chall Auditory Blending Test: Blending sequences of sounds spoken by the examiner								X	
The Phonological Awareness Test (PAT) by Muter, Hulme & Snowling	X		X			X			X
The Phonological Awareness Test (TPAT) by Robertson & Salter			X	X	X	X	X	X	X
Comprehensive Test of Phonological Processing (CTOPP) Tests of phonological awareness, memory & rapid naming	X			X		X		X	

The organization of these tables is borrowed from Table 11.1, p. 308 in Brody, S. (Ed) (2001). Teaching reading: Language, letters & thought (2nd ed)

A Sampling of Writing Tests[8]

	Spelling of Words	Writing Non-sense Words	Writing Vocabulary	Writing Dictated Sentences	Editing	Story: Picture Prompt	Story: Oral Prompt	Content Score	Syntax Score	Punc-tuation Score	Writing Speed	Writing Speed	Norms
OWLS	context		context	yes	yes				yes	yes	yes		both
TOWL-3			*2 scores*	2 scores	2 subtests	yes	*3 scores*		yes	yes	yes		age
TOWL-2			*2 scores*	2 scores	2 subtests	yes	*5 scores*		yes	yes	yes	*	age
WIAT-II	list							*letter*	*holistic*		both[5]		both
WJ III	list	list			1 subtest	yes ***	***	***	yes	**	yes	*yes*	both
PIAT-R_{NU}	mlt-chc								*holistic grade stanine*				both[1]
$KTEA_{NO}$	list												both[1]
TWS-3	2 lists												age
G-F-W		list											age
DAS	list												both
WRAT-3	list												age

Italics – time limits

* scores are very strongly influenced by the amount written in 15 minutes
** part of scoring on Writing Samples
*** there are guidelines for assessing writing samples from other sources

The organization of these tables is borrowed from Table 11.1, p. 308 in Brody, S. (Ed) (2001). Teaching reading: Language, letters & thought (2nd ed)

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[1]Seasonal Grade norms

Steps in Conducting a CBA: Curriculum-Based Assessment

1. Sample items are selected from the curriculum.

2. Arrange items in order of difficulty.

3. Selected items should be administered to the entire class.

4. The test should be repeated at least 2 times with different items from the same content.

5. Assessment should be conducted across several curricula levels.

6. Student performance as a class should be recorded.

7. Acceptable levels of student performance or mastery which reflect the typical classroom performance should be determined.

8. CBA should be conducted with individual students or groups of students immediately prior to instruction on a topic.

9. Results should be studied to determine which students have already mastered the skills targeted for instruction, which students possess sufficient pre-skills to begin instruction, and which students lack mastery of pre-skills.

10. CBA should be readministered immediately after instruction on the topic.

11. CBA decisions from results should focus on determining:
    a. which students have mastered the skills and are ready to begin a new topic,
    b. which students are making sufficient progress but require more practice, and
    c. which students are making insufficient progress and require teacher modification of some aspect of instruction.

12. Instructions should be modified to reflect student performance (i.e., do not repeat mastered areas and give more assistance on area not yet mastered).

13. CBA should be readministered periodically throughout the year to assess long-term retention.

Normalized Standard Score Conversions from Percentile Ranks

PERCENTILE RANK	STANDARD SCORE	PERCENTILE RANK	STANDARD SCORE	PERCENTILE RANK	STANDARD SCORE
99	135	66	106	33	93
98	131	65	106	32	93
97	128	64	105	31	93
96	126	63	105	30	92
95	125	62	105	29	92
94	123	61	104	28	91
93	122	60	104	27	91
92	121	59	103	26	90
91	120	58	103	25	90
90	119	57	103	24	89
89	118	56	102	23	89
88	118	55	102	22	88
87	117	54	102	21	88
86	116	53	101	20	87
85	116	52	101	19	87
84	115	51	100	18	86
83	114	50	100	17	86
82	114	49	100	16	85
81	113	48	99	15	84
80	113	47	99	14	84
79	112	46	98	13	83
78	112	45	98	12	82
77	111	44	98	11	82
76	111	43	97	10	81
75	110	42	97	9	80
74	110	41	97	8	79
73	109	40	96	7	78
72	109	39	96	6	77
71	108	38	95	5	75
70	108	37	95	4	74
69	107	36	95	3	72
68	107	35	94	2	69
67	107	34	94	1	65

Not All Test Scores Are Alike

Excerpts from—R. P. Dumont & J. O. Willis 1999

The Gift of Time

Grade Norms vs. Age Norms

Grade-Equivalent Scores

- Not equal units: cannot be added, subtracted, multiplied, divided, nor averaged
- Do not reflect the student's actual functioning level
- May not be real scores at all (interpolated and extrapolated)
- May not even be grade levels included in the test

Percentile Ranks

- The percent of students whose scores were tied or beaten by this student. The 37th percentile rank means you scored as high as or higher than 37 percent of the students in the test's norming sample or in your local group. The 99th percentile means you were in the highest one percent of the group
- Nothing to do with percent correct. (Never use % sign in an abbreviation!)
- Not equal units – cannot be added, subtracted, multiplied, divided, nor averaged

Standard Scores and Scaled Scores

- Measure how far the student scored from the average in terms of the average spread of scores for the whole group. A standard score of 115 or scaled score of 13 means the student scored one standard deviation above the average (which would be the 84th percentile rank). A standard score of 85 or scaled score of 7 means the student scored one standard deviation below the average (which would be a percentile rank of 16)
- Equal units – can be added, subtracted, multiplied, divided, or averaged if you're in the mood
- Too narrow: Encourage obsessive comparisons between essentially identical scores
- Often misunderstood

Stanines

- Almost equal units: can be added, subtracted, multiplied, divided or averaged if you wish
- Too broad – Encourage obsessive comparisons between essentially identical scores
- Fairly easy to explain and understand (on a good day)

Percentile Ranks and Standard Scores

- These two statistics will not always tell the same story. A student may not be many points away from the average and still have an extreme percentile rank or may be many points away from the average and nonetheless have a fairly average percentile rank

Confidence Bands

- Test scores are never perfectly accurate. Lucky or unlucky guesses, lapses of attention and other factors mean that the same person would almost never get exactly the same score on a test twice in a row. A confidence band around a score tells how scores on that test are likely to vary by pure chance.
- If the confidence bands on two scores overlap, there probably is not a significant difference between the two scores. On another day the higher and lower scores might have been reversed
- If the confidence bands on two scores do not overlap, and if both scores are probably valid, there probably is a significant difference between the two scores. On another day, the higher and lower scores would probably have still been the higher and lower scores, respectively

Stanines

- As a rough approximation, you can usually assume that two valid scores that are in adjacent stanines may not be significantly different, but that two valid scores that differ by more than one stanine probably are significantly different

Significant Difference

- A "significant difference" is one that is too large to have been likely to have occurred by chance when there was no real difference between the abilities being tested. This likelihood is expressed as a probability (e.g., $p < .05$ means that there were fewer than 5 chances in 100 of a difference that is large or larger happening by accident)

Base-rate

- Base-rate refers to the prevalence or frequency of a particular occurrence or event within a population. Awareness of relevant base-rate data allows an evaluator to determine the diagnostic utility of a particular sign. Although a particular relevant comparison may reach some level of statistical significance, it is always necessary to determine if the statistical difference is a usual or an unusual one. Base-rate information provides just such data
- Although an 11.2 point difference between scores on the WISC-III Verbal and Performance scales represents a statistical difference, base rate tells us that such an occurrence is likely to happen in about 40.2% of the population

Item Analysis

- A score can tell you only so much and some of what it tells you may be wrong. To really understand a student's test performance, you need to look at the individual item responses. For example, the Gates-MacGinitie manuals have extremely valuable sections on sources of error, such as responding to a single word in the paragraph instead of the whole text, making false assumptions on the basis of prior knowledge or overemphasizing one part of the story

Scoring

- All scores should be done three times. Count the number right. Then count the number wrong and subtract that from the total. Finally, start with the number right and add one point for each wrong item. You should come out with the total number of items at the end. Read numbers and titles of tables, columns and rows aloud as you look up scores and listen to yourself
- Examine your resulting standard scores. Do any look like they don't belong? The child with a score of 143 on Memory for Sentences and scores hovering around 100 on all other test should set off a mad rush to answer the question "Why?" Often you will find that you made a mistake when you scored the test as opposed to having just discovered some weird ability of the child. "Tester: Blame thyself before passing the blame on to others"

Test Scores Are Not Necessary Trustworthy: Pervasive Invalidity

- The student may have just blown off the test
- The student may have had a bad day
- The student may have followed the instruction to skip too-difficult items but forgotten to skip the corresponding items on the answer sheet
- The student may not have followed the instruction to skip too-difficult items and spent most of the time struggling bravely but fruitlessly on one impossible item
- The answer sheet may have baffled the student (Hint: if the name is spelled wrong on the printout, the scores may well be invalid)
- The student may fail to switch tasks (e.g., initial sounds to final sounds, synonyms to antonyms)
- The student may be carrying out an entirely different task from the one intended
- The ordinarily very generous time limits may be too short for a few students who work very slowly
- The ordinarily reasonable time allotments for subtests may exceed some students' attention spans
- The student's score may be low but it results from doing what has been instructed in the classroom. The student "worked slowly" but inaccurately thus completing very few Coding (Symbol Search, Cross Out, etc.) items but getting every one correct
- The student's score may be low but it results from doing what has been instructed on the test. The student "worked quickly" but inaccurately thus completing very many Coding (Symbol Search, Cross Out, etc.) items but getting many incorrect

Confusion between Incapacity and Specific Problems

- Free-response and multiple-choice tests are not comparable for some students
- The student may have misread operation signs
- The student may know the process (e.g., long division) well but make computational errors (e.g., subtracting wrong in an otherwise correct long division problem)
- The student may fail otherwise easy math applications problems because of reading difficulty
- The student may understand fairly high-level skills but make simple errors on much simpler skills
- The score may slightly overestimate the student's working level if the student is unusually accurate on the problems the student can solve

STUDY AND USE THE INTERPRETIVE SUGGESTIONS IN THE TEST MANUALS

Resources: General Education Intervention Strategies

How to Reach and Teach All Students in the Inclusive Classroom: Ready to Use Strategies, Lessons and Activities for Teaching Students with Diverse Learning Needs. Sandra F. Reif and Jule A. Heimburge. (1996). Prentice-Hall Trade.

Put Reading First: The Research Building Blocks for Teaching Children to Read, September 2001. The Partnership for Reading: National Institute for Literacy; National Institute of Child Health and Human Development and U.S. Department of Education. EXR0007B. (html Version). National Institute for Literacy at ED Publishers. P.O. Box 1398, Jessup, MD 20794-1394. Phone 1-800-228-8813. Available in print and online at http://www.nifl.gov/partnershipforreading/publications/Cierra.pdf (Adobe Acrobat) or http://www.nifl.gov/partnershipforreading/publications/reading_first1.html

This booklet summarizes for teachers what researchers have discovered about how to teach children to read successfully. It describes the findings of the National Reading Panel Report and provides analysis and discussion in five areas of reading instruction: phonemic awareness; phonics; fluency; vocabulary; and text comprehension. Each section suggests implications for classroom instruction as well as other information.

Put Reading First: Helping Your Child Learn to Read. September 2001. The Partnership for Reading: National Institute for Literacy, National Institute of Child Health and Human Development, and U.S. Department of Education. EXR0006H. Available in print and online at http://www.nifl.gov/partnershipforreading/publications/Parent_br.pdf (Adobe Acrobat) or http://www.nifl.gov/partnershipforreading/publications/reading_first2.html (html Version).

This brochure, designed for parents of young children, describes the kinds of early literacy activities that should take place at school and at home to help children learn to read successfully. It is based on the findings of the National Reading Panel.

The Prereferral Intervention Manual. Stephen B. McCarney. (1993). Hawthorne Educational Services. 800 Gray Oak Drive, Columbia, MO 65201.

The ADD Intervention Manual. Stephen B. McCarney. (1993). Hawthorne Educational Services. 800 Gray Oak Drive, Columbia, MO 65201.

The Learning Disability Intervention Manual. Stephen B. McCarney. (1993). Hawthorne Educational Services. 800 Gray Oak Drive, Columbia, MO 65201.

The Encyclopedia of Behavior Management: 100 Problems – 500 Plans. Randall S. Sprick. (1995). The Library Management Motivation and Discipline Series.

The Tough Kid Book: Practical Classroom Management Strategies. Ginger Rhode, William R. Jenson, & H. Kenton Reavis. (1996). Sopris West. 1140 Boston Ave., Longmont, CO 80501.

The Tough Kid Tool Box. Ginger Rhode, William R. Jenson, & H. Kenton Reavis. (1994). Sopris West. 1140 Boston Ave., Longmont, CO 80501.

Teaching Kids with Learning Disabilities in the Regular Classroom: Classroom Strategies and Techniques Every Teacher Can Use to Challenge and Motivate Struggling Students. Susan Winebrenner. (1996). Free Spirit Publications.

Guidebooks: Reading Instruction

A Basic Guide to Understanding, Assessing, and Teaching Phonological Awareness. Joseph K. Torgenson and Patricia Mathes. (2000). Pro-Ed

Activity Books: Linguistic Background Information

Phonemic Awareness in Young Children: A classroom Curriculum. Marilyn Adams, Barbara R. Foorman, IngVar Lundberg & Terri Beeker. (1998). Paul. H. Brookes.

Road to the Code: A Phonological Awareness Program for Young Children. Benita A. Blachman, Eileen Wynne Ball, Rochella Black & Darlena M. Tangel. (2000). Paul H Brooks.

Phonemic Awareness: Playing with Sounds to Strengthen Beginning Reading Skills. Bo Fitzpatrick. (1997). Creative Teaching Press.

Phonemic Awareness Activities for Early Reading Success. Easy Playful Activities That Prepare Children for Phonics Instruction. Wiley Blevins. (1997). Scholastic.

Phonemic Awareness Songs and Rhymes. Wiley Blevins. (1999). Scholastic.

Recommended Textbooks and Resources

Adams, M. (1990). Beginning to read. Cambridge, MA: MIT Press.

American Federation of Teachers (Spring/Summer 1998). American Educator. Volume 22, The Power of Reading.

Blachman, B. (Ed.). (1997). Foundations of Reading Acquisition and Dyslexia: Implications for Early Intervention. Mahwah, NJ: Lawrence Erlbaum.

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Moats, L.C. (2000). Speech to Print: Language Essentials for Teachers. Baltimore, MD: Paul Brookes Publishing.

National Institute of Child Health and Human Development (2000). Report of the National Reading Panel. Washington, DC: NICHD.

Sacramento County Office of Education (1999). Read All About It: Readings to Inform the Profession. (This is a compilation of “landmark” journal articles on each major component of reading instruction, assembled to explain the rationale behind the provisions of the California Reading Initiative.)

Snow, C., Burns, S. & Griffin, P. (1998). Preventing reading difficulties in young children. National Research Council, National Academy of Sciences Press.

References for Use in Professional Development of Teachers of Reading

American Federation of Teachers. (2000). Putting reading front and center: A resource guide for union advocacy. Washington, DC: American Federation of Teachers.

Armbuster, B.B., Lehr, F. & Osborn, J. (2001). Put reading first: The research building blocks for teaching children to read. Washington, DC: Partnership for Reading.

Burns, S., Griffin, P. & Snow, C. (1999). *Starting out right: A guide to promoting children's reading success.* Washington, DC: National Academy Press.

California State Board of Education. (1999). Learning to Read: Components of Beginning Reading Instruction, K-8. Sacramento County Office of Education, Comprehensive Reading Leadership Center.

California State Board of Education (1999). Read All About It!: Readings to inform the profession. California Reading Initiative Center, Sacramento County Office of Education, 916-228-2444 (FAX)

Diamond, L., Gutlohn, L &, Honig, B. (2000). Teaching reading sourcebook for kindergarten through eighth grade. Novato, CA: Arena Press.

International Reading Association & National Association for the Education of Young Children (1998). Learning to read and write: Developmentally appropriate practices for young children. Newark, DE: International Reading Association; Washington, DC: National Association for the Education of Young Children.

Kameenui, E.J. & Carnine, D.W. (1998). Effective teaching strategies that accommodate diverse learners. Upper Saddle River, NJ: Merrill, Prentice-Hall

Kamil, M., Mosenthal, P., Pearson, P.D. & Barr, R. (Eds.), *Handbook of reading research: Vol. 3*. Mahwah, NJ: Lawrence Erlbaum.

Learning First Alliance. (1998). Every Child Reading: An Action Plan. Washington, DC: Author. http:www.learningfirst.org/publications.html

National Reading Panel. (2000). Report of the National Reading Panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Washington, DC: National Institute of Child Health and Human Development, National Institutes of Health. http://www.nichd.nih.gov/publications/nrp/smallbook.htm

Simmons, D.C. & Kameenui, E.J. (1999). What reading research tells us about children with diverse learning needs: Bases and basics. Mahwah, NJ: Erlbaum.

Reading Materials: Publisher Information

A Better Way of Learning. 150 Paularino Ave., Suite 120, Costa Mesa, CA 52626. 800-500-GAME.

Academic Therapy Publications. 20 Commercial Boulevard, Novato, CA 94949-6191.

Albert Whitman & Co. 6340 Oakton St., Morton Grove, IL 60053-2723.

Children's Press/Grolier. 90 Sherman Turnpike Rd. Danbury, CT 06816. 800-621-1115.

Communication Skills Builders. 555 Academic Cr., San Antonio, TX 78204. 800-211-8378. Fax 800-232-1225.

Continental Press, Inc. Elizabethtown, PA 17022-2299. 800-233-0759.

Critical Thinking Books and Software. P0 Box 448, Pacific Grove, CA 93940. 800-458-4849. Fax 408-393-3277.

Curriculum Associates, Inc. P0 Box 2001, North Billerica, MA 01862-0901. 800-225-0248. Fax 508-667-5706.

Duvall Publishing. 422 West Appleway, Coeur d'Alene, ID 83814.

EDC Publishing. 10302 B. 55th Place. Tulsa, OK 74146.

Educators' Publishing Service. 31 Smith Place, Cambridge, MA 02138-1000. 800-225-5750. Fax 617-547-0412.

Read Naturally. 2329 Kressin Avenue, St. Paul, MN 55120. 800-788-4085 Fax 612-452-9204. E-mail READNAT@aoLcom.

Recorded Books, Inc. 270 Skipjack Road, Prince Frederick, MD 20678. 800-638-1304.

Recordings for the Blind and Dyslexic. 20 Roszel Road, Princeton, NJ 08540. 800-221-4792. Fax 609-987-8116. E-mail http://www.rfbd.org.

Remedia Publications. 10135 East Via Linda #D124, Scottsdale, AZ 85258-5312.

Scholastic, Inc. 555 Broadway. New York, NY 10012. 800-724-6527.

SRA/McGraw-Hill. 250 Old Wilson Bridge Road, Suite 310, Worthington, OH 45085. 888-SRA-4KIDS.

Steck-Vaughan Co. P0 Box 26015, Austin, TX 78755. 800-531-5015.

Therapy Skill Builders. 555 Academic Court, San Antonio, TX 78204. 800-211-8378. Fax 800-232-1223.

Twins Publications. PO Box 6364, Columbia, SC 29260-6364. 803-782-1781. Fax 803-787-8508.

Write Source/D.C. Heath. 181 Ballardvale St., Wilmington, MA 01887. 800-235-3565.

Write Track Educational Consultants and Publishers. 16 Charnwood Dr., P0 Box 875, Suffern, NY 10901. 914-368-2795. 800-845-8402. Fax 914-357-5327.

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The following websites also provide up-to-date and relevant resources for practitioners:

www.brainconnections.com

BrainConnection Professional Development offers online courses about the brain and learning, designed especially for educators. This website offers information and training for parents and education professionals in issues and recent research in areas of neurological assessment and learning.

http://www.iapsych.com

This is the official website of the Institute of Applied Psychometrics. The main focus of the information provided is Cattell-Horn-Carroll theory. Addresses measurement issues and provides cogent and readable explanations of many of the issues discussed in this manual.

www.cal.org. The Center for Applied Linguistics in Washington, D.C. (202-362-0700)

This useful resource about other languages and cultures

www.interdys.org The International Dyslexia Association. 8600 La Salle Road, Chester Building, Suite 382, Baltimore, MA 21286-2044. 1-800-ABCD123.

Provides easy to read information for professionals and parents.

http://www.nasponline.org/pdf/SLD_OSEP.pdf Specific Learning Disabilities: Finding Common Ground

A report developed by the ten organizations participating in the Learning Disabilities Roundtable – Sponsored by the Division of Research to Practice, Office of Special Education Programs, Washington, D.C. 20202

http://www.ld.org/advocacy/IDEAwatch.cfm

In an effort to provide an ongoing chronology of events associated with the pending reauthorization of the Individuals with Disabilities Education Act (IDEA), NCLD has introduced IDEA Watch on its Web site. This web page tracks NCLD legislative activities as well as all IDEA related activities in the U.S. Congress, the Bush Administration (including the Department of Education), independent organizations and agencies, and important news stories.

http://www.mtsu.edu/~dyslexia/index.html

This is the website of the Tennessee Center for the Study and Treatment of Dyslexia. Provides easy to read information for professionals and parents. Also has links to many other useful sites. Tennessee Center for the Study and Treatment of Dyslexia. Middle Tennessee State University (MTSU). 610 W. College Street, Suite 120, Murfreesboro, TN 37130. (615) 848-1271.

http://www.ncbe.gwu.edu

National Clearing House for Bilingual Education (202-467-0867). This useful resource about other languages and cultures

www.nifl.gov or www.nationalreadingpanel.org

National Institute for Literacy. A complete copy of the NRP report can be read, downloaded, or ordered at no cost from the NRP website.

http://www.nochildleftbehind.gov/Newsletter/20020520.html

This online newsletter, The Achiever provides recent information on the Federal law "No Child Left Behind." Information can be viewed, downloaded or e-mailed in pdf format.

http://www.schoolpsychology.net

This site is a clearinghouse for links to other sites on most topics of interest to School Psychologists. If you need to research a topic or are looking for specific information, this site is the place to start!

http://www.state.tn.us/education/ci/cistandards2001/la/cik3readassess.htm

Tennessee Department of Education/Division of Curriculum and Instruction. Language Arts K-3 Assessment Programs. This site is continuously updated and provides reading assessment instrumentation information that is useful for intervention and remediation.

http://www.ldonline.org/ld_indepth/research_digest/evidence_based.html

Copies are also available through the department's "ED Pubs" service on the Web at: https://gw5.state.tn.us/servlet/webacc?merge=linkurl&Url.linkText=http://www.ed.gov/about/ordering.jsp or by phoning 1- *877-4-ED-PUBS.*

"What is research-validated instruction?" In Focus How does it benefit children with LD and/or ADHD? In the June 6, 2002 Subcommittee on Education discussion of IDEA reform, Robert Pasternack, Ph.D., Assistant Secretary for Special Education and Rehabilitative Services, stated that the "challenge is to use science and evidence to guide policy and instruction.."

http://www.tasponline.org

Tennessee Association of School Psychologists – professional organization for school psychologists.